Toward Sustainable and Harmonized Development of Lao Agriculture

Kono Yasuyuki, Yokoyama Satoshi, Yamada Yukihisa and Phanxay Ingxay

November 2014

Toward Sustainable and Harmonized Development of Lao Agriculture
Achievements of Sakura Science Plan for NAFRI Young Staff
Organized by Kyoto and Nagoya Universities

Editors: Kono Yasuyuki, Yokoyama Satoshi, Yamada Yukihisa and Phanxay Ingxay

Organized by

Center for
Southeast Asian Studies,
Kyoto University

Graduate School of
Environmental Studies,
Nagoya University

National Agriculture
and Forestry
Research Institute

Sponsored by

Japan-Asia Youth Exchange Program in Science
(SAKURA Exchange Program in Science)
Japan Science and Technology Agency (JST)

Preface

National Agriculture and Forestry Research Institute (NAFRI) has long lasting cooperation with Postgraduate School of Environmental Studies, Nagoya University and Center for Southeast Asia Study (CSEAS), Kyoto University for mutual benefits of fostering academic exchange and partnership in order to further research and capacity building on both sides.

The areas of cooperation are to promote academic exchange and partnership between the institutions through programs of joint research, conferences, publications, sharing of library and research resources, access to internet and electronic media, and the exchange of faculty and research staff. Both parties agree to act as hosts for faculty and research staff on academic exchange from the partner institution.

Dear readers:
This year is a historical event for the National Agriculture and Forest Research Institute (NAFRI) which is the 15 anniversary celebration. NAFRI has been established in April 19th, 1999 by combining existing research centers and stations and involving of several research fields e.g. crops, livestock, fishery and forestry to organize agriculture and forestry research in more holistic and systematic approach for effective and sustainable agriculture and forestry development. For 15 years of its establishment, NAFRI researchers and staff had carried out the research in agro-biodiversity, plant and livestock breeding, improving the productivity and related agriculture policy contributing to agriculture and forestry development in Lao PDR. The international cooperation with partners including cooperation with CSEAS and Nagoya University has significantly contribute to the successful achievements in agriculture and forestry research of NAFRI

After the signing of Memorendum of understanding (MOU), I have raised our concern with Dr. Kono Yasuyuki and Dr. Satoshi Yokoyama on how to help building the capacity of NAFRI researchers, particularly young researchers and staff. The response was very positive and one of the action for this purpose is the SAKURA Programme.

The SAKURA visiting programme entitled: “Toward Sustainable and Harmonized Development of Lao Agriculture: Achievements of Japan-Asia Youth Exchange Program in Science for National Agriculture and Forestry Research Institute, Lao PDR” is a good

example of our cooperation agreement. This programme provides a great opportunity for 10 NAFRI young staff and researchers to visit Nagoya University, Center for Southeast Asia Study and many interesting places. The Home-stay program with farmers in Shiga prefecture also give a chance for our young staff to live and to learn Japanese culture, Japanese working experiences, social live in rural areas.

I do believe that the experiences gained, Japanese culture and social economic development seen and observed during this learning trip will be remained in the bottom of the heart of NAFRI young staff forever. I also do hope that the lessons learned from this trip will be useful for their future work at NAFRI and useful for future cooperation with Japanese colleagues.

On behalf of NAFRI management, I would like to acknowledge Professor Kono Yasuyuki, the Director, Center for Southeast Asian Studies, Kyoto University, and Prof. Satoshi Yokoyama, Postgraduate School of Environmental Studies, Nagoya University, for their support and fruitful cooperation. We look forward for future meaningful cooperation in the future.

Dr. Bounthong Bouahom
Director General
National Agriculture and Forestry Research Institute
Ministry of Agriculture and Forestry
Lao PDR.

Contents

1. Introduction

Prof. Kono Yasuyuki
Center for Southeast Asian Studies, Kyoto University

On 9th April, 2014, National Agriculture and Forestry Research Institute (NAFRI) celebrated the 15th anniversary. Prof. Yokoyama Satoshi, Nagoya University, and I were invited to join and attended the ceremony. In this occasion, Center for Southeast Asian Studies (CSEAS), Kyoto University, and NAFRI exchanged the Memorandum of Understanding (MOU). In the process of making the draft of MOU, Dr. Bounthong Bouahom, Director General of NAFRI, strongly insisted on using the word "capacity building". It must be because capacity building is the most important and urgent issue for NAFRI, I think. As I fully agree with his idea, we put the word "capacity building" in the preamble of MOU. This is the first collaborative program between Kyoto and Nagoya Universities and NAFRI which pinpoints "capacity building", though we have made significant efforts to work together with and train young staff of NAFRI through joint field works and research projects in the past.

15 years of NAFRI exactly coincide with the history of exchange between Kyoto University and NAFRI. I first visited NAFRI on June 1999 and was welcomed by Dr. Ty Phommasak, the first Director General of NAFRI. This visit was to set up a new research project titled "People, Environment and Land Use Systems in Mainland Southeast Asia". This project focused on land use, shifting cultivation, non-timber forest products, livelihood and forest- and agro-ecosystems of the northern part of Laos. In 2003, Prof. Akimichi Tomoya, Research Institute for Humanity and Nature, in collaboration with Kyoto University, set up a new joint research project titled "A Trans-Disciplinary Study on the Regional Eco-History in Tropical Monsoon Asia: 1945-2005". This project selected three core study villages, Na Savang village, Namo district, Oudomxay province, Dong Khouai village, Xaythany district, Vientiane province and Lahanam sub-district, Songkhone district, Savannakhet province. We studied natural resources, livelihood, food and health and their historical changes of the villages. Then, succeeding the eco-history project, Prof. Moji Kazuhiko, Research Institute for Humanity and Nature, set up a new project specifically focusing on eco-health in 2009. Through these research projects, Kyoto University and NAFRI continuously worked together during the last 15 years.

These joint researches produces a wide range of publication. We published one English book, three English special issues and one Lao special issue as listed below.

Kono, Y. and Rambo, A. T. eds. 2004. *Sustainable Agro-resources Management in the Mountainous Region of Mainland Southeast Asia*, Southeast Asian Studies 41(4).

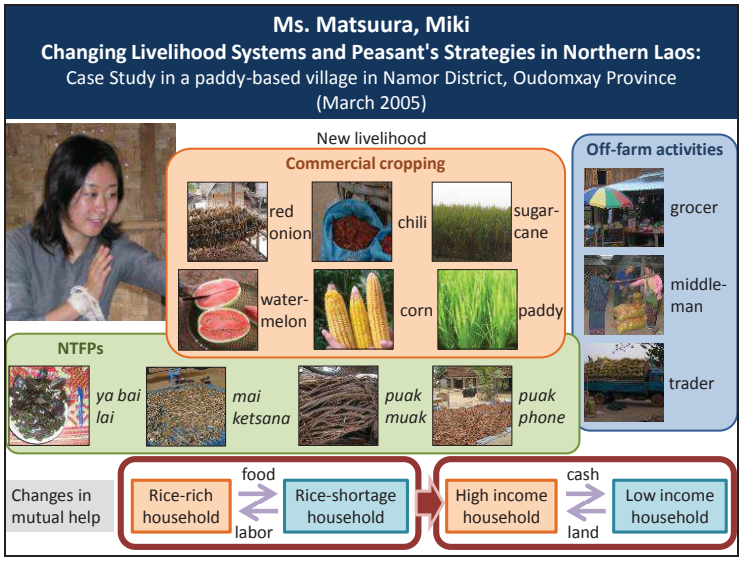
Bouahom, B., Kono, Y. and Nonaka, K. eds. 2007. *Thammasat, Manut lae Saphapweadlon* (Nature, Humand and Environment), Vientiane: National Agriculture and Forestry Research Institute.

Leisz, S. J., Kono, Y., Yanagisawa, M. and Fox, J. eds. 2009. *Mechanisms of land use change in Mainland Southeast Asia,* Southeast Asian Studies 47(3).

Akimichi, T. ed. 2009. *An Illustrated Eco-history of the Mekong River Basin*, Bangkok: White Lotus.

Kono, Y., Badenoch, N., Tomita, S., Douangsavanh, L. and Nonaka, K. eds. 2010. *Agency, opportunity and risk: Commercialization and the human-nature relationships in Laos*, Southeast Asian Studies 47(4).

Several young scholars including Japanese and Lao also grew up through these research projects. The below are just a few of them.



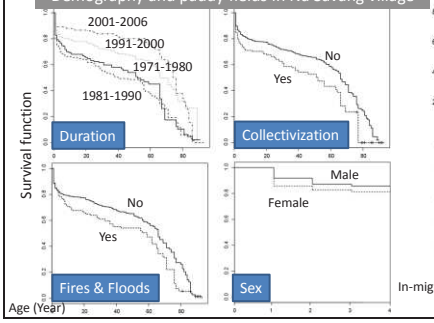
Dr. Tomita, Shinsuke (Visiting International Scholar, Pennsylvania State Univercity)

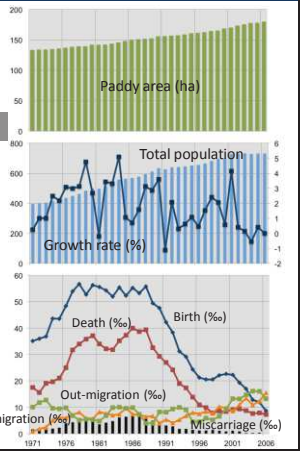
Dynamics of Demography and Landuse in Northern Laos

(2003-present)

- GIS/RS analysis
- Reconstruction of demography and landuse
- Field work

Demography and paddy fields in Na Savang village



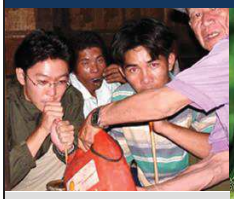


Dr. Yosuke Kuroda

(National Agriculture and Food Research Organization)

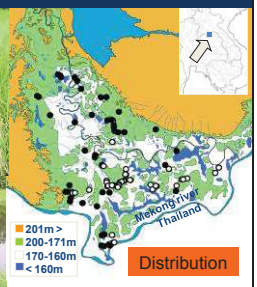
Conservation Biological Studies on Asian Wild Rice in the Vientiane Plain of Laos

(March 2006)



- Plant genetic resources
- Molecular breeding
- Field work

Monitoring (*in situ* conservation)



Distribution

Interview

Analysis → Output

Kuroda *et al.* (2003) *Tropics*, **12**, 159-170.
Kuroda *et al.* (2005) *GRACE*, **52**, 151-160.
Kuroda *et al.* (2005) *Euphytica*, **142**, 75-83.
Kuroda *et al.* (2006) "Rice in Laos" chapter15, 215-234.
Kuroda *et al.* (2007) *Conservation Genetics*, **8**, 149-158.

Dr. Thatheva Sapahngthong

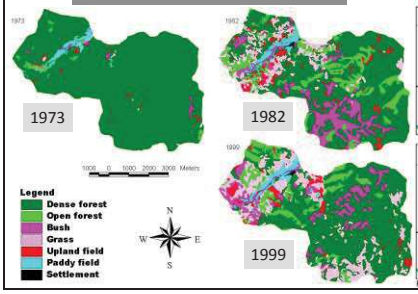
(Deputy Director General, Council for Science and Technology, Ministry of Agriculture and Forestry)

Dynamics and Sustainability of Land Use Systems in Northern Laos

(March 2007)

- RS/GIS analysis
- Soil sampling and analysis
- Field work

Land use changes at Napa Tai village



Present land use

Transitional period

Proposed land use

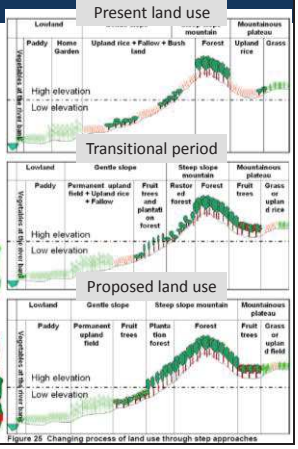


Figure 25 Changing process of land use through step approaches

I am sure that we can list up much more number of prominent young Lao people through this program who would be the next-generation leaders of agricultural and forestry development of Laos and academic exchange between Japan and Laos. I sincerely hope that this program provided an occasion for young staff of NAFRI to have wider scope on their duty beyond their daily activity, to expand their views on Lao agriculture and forestry in the global context and to have stronger motivation to contribute to their development.

This program is financially supported by Japan-Asia Youth Exchange Program in Science of Japan Science and Technology Agency (JST). I would like to express my sincere thanks to JST.

2. Announcement of the program

Kyoto and Nagoya Universities Capacity Building Program
for Young Staffs of NAFRI
2014

Kyoto University, represented by Prof. Kono Yasuyuki, and Nagoya University, represented by Prof. Yokoyama Satoshi, jointly organize the capacity building program for young staff of NAFRI as a part of collaborative activities between Kyoto and Nagoya Universities and NAFRI.

1. Aims

This program aims at providing the opportunity for young staff of NAFRI to learn advanced agricultural technology and institutions of Japan, to improve the ability of communication, presentation and debate in the international occasion, and to have stronger motivations to develop themselves as a next-generation leader.

2. Participants

The qualifications of participant are as follows.

1) Having a position in NAFRI
2) Aged 40 or below
3) Having a strong intention to be a next-generation leader
4) The persons who have never been to Japan are prioritized.

The number of participant is 10 persons or less.

3. Period

From 19th Oct. 2014 to 29th Oct. 2014 (11 days)

4. Program (tentative)

Day	Date			Major activity	Stay at
1	19th Oct.	Sun.	PM	VTE/BKK TG2575 21:35/22:40	
2	20th Oct.	Mon.	AM	BKK/NGO TG640 0:05/8:00 Arrive at Chubu Airport (8:00) Move to Nagoya University Orientation and lecture	
			PM	Excursion to TOYOTA factory	Nagoya

3	21st Oct.	Tue.	AM/PM	Excursion to vegetable farm	Nagoya
4	22nd Oct.	Wed.	AM	Move to Kyoto	
			PM	Attend a graduate student seminar at Kyoto University	Kyoto
5	23rd Oct.	Thu.	AM/PM	Move to Shiga prefecture Practical training at farm village	Hino town
6	24th Oct.	Fri.	AM/PM	Practical training at farm village	Hino town
7	25th Oct.	Sat.	AM/PM	Practical training at farm village Move to Kyoto	Kyoto
8	26th Oct.	Sun.	AM/PM	Preparation of presentation	Kyoto
9	27th Oct.	Mon.	AM	Preparation of presentation	
			PM	Reporting seminar at Kyoto University	Kyoto
10	28th Oct.	Tue.	AM/PM	Study tour on Japanese culture	Kyoto
11	29th Oct.	Wed.	AM	Move to Kansai Airport KIX/BKK TG623 11:00/15:45 BKK/VTE TG574 19:45/20:55	

5. Cost

A round-trip air ticket and all the expenditure in Japan, including the cost of accommodation, food and domestic traveling, are provided by the program. The other expenditure, including the costs for acquiring passport and visa, must be covered by the participant.

6. Duty of participants

1) The participants have to present the summary reflections of the program on Day 9. So they are requested to bring the necessary equipment for preparing the presentation such as PC and digital camera.
2) The participants must submit the written report. The expected contents of the report will be provided later.

7. Remarks

1) All the participants must be responsible for the safety of his/herself and his/her belongings during the program period.
2) The program will not prepare a Lao language translator. The organizers sincerely expect you to survive in Japan without Lao language.

8. Source of program fund

This program is a part of "SAKURA Exchange Program in Science" under "Japan-Asia Youth Exchange Program in Science", and financially supported by Japan Science and Technology Agency (JST).

9. Organizer

1) Prof. Kono Yasuyuki
Center for Southeast Asian Studies, Kyoto University
Office Tel. +81-75-753-7323, Mobile Tel. +81-80-3035-5596

2) Prof. Yokoyama Satoshi
Graduate School of Environmental Studies, Nagoya University
Office Tel. +81-52-789-4742, Mobile Tel. +81-90-4987-2785

3. Self-introduction of participants

Name	(Family)	(First)	(Middle)
	SENAMOUNTRY	Mr. Khamphouvanh	
Nickname	Mr. Ki		
Area of Research			
Please let me know if there are anything you can't eat or you have allergies	I can eat anything		
Shoe size	9.5		
Self-introduction	My name's Khamphouvan SENAMOUNTRY was been working as Agriculture research Center, National Agriculture and Forestry Research Institute sinece 2008. I worked in the Plant Breeding Division and i was a Bachelor of science (BS) degree in Agronomy for compare fertilizer in maize field from Faculty of Agriculture, National University of Laos and a Master of science (MS) degree in Response to five cycles of modified mass selection for ear length in waxy corn from Khon Kean University, Thailand, graduated in 2012. I'm a corn breeder. In area of professional interest to improved corn is high yield in Lao PDR and Current project and researching about breeding on local waxy corn in Lao PDR.		

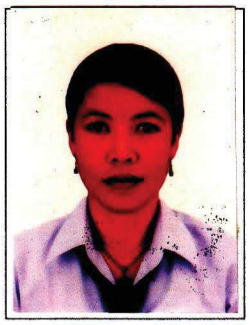
Name (Name exactly same as on passport)	(Family) (First) (Middle) SENGOUNKEO Phathana Phath
Nickname	Phath
Area of research	Horticulture Research Center
Please let me know if there are anything You can't eat or you have allergies	Non
Shoe size	40
Self -introduction	I am Mr Phathana SENGOUNKEO, I work at Horticulture Research Center, I responsible about Gene bank

Name	(Family) (First) (Middle) LORBOUN IA PHONPHIANE
Nickname	
Area of research	
Please let me know if there are Anything you can't eat or you have allergies.	Spicy food and insects
Shoe size	42
Self-introduction	I'm Phonphiane LORBOUN IA, I'm 30 years old. I am working for Louangnamtha provincial agriculture and forestry department in agriculture research center as head of rubber unit. I am very healthy and funny person, my favorite food is vegetables and beef steak.

Work Experience	From-to (date, month, year)	Name of Institution, position
Land tenure use right and titling of agriculture and forestry land, land use agriculture and forestry management and development training.	09/2005 to 02/2006	Agriculture and forestry Division province, Lao PDR, the position is technical of forestry unit.
Research activities relates to promote planning, summarize compiled legislative decrees and research all activities result of departments and institute to by agreement in science council meeting of ministry of agriculture and forestry.	09/09/2009 to 30/ 03/2011	National Agriculture and Forestry Research Institute, the position is Technical of technique science council Office.
Coordinating and advice for staff capacity building plan in National Agriculture and Forestry Research Institute, and the appropriate disciplinary action against those who break the laws of the state.	01/04/2011 to present	National Agriculture and Forestry Research Institute, Administration Division, the position is technical of human resource unit.

Name	**(Family)** **(First)** NAKAVONG Vinaithong
Nickname	Mr. Rock
Area of research	National Agriculture and Forestry Research Institute.
Please let me know if there are anything you can't eat or you have allergies.	I can eat anything and have not allergies.
Shoe size	41 size
Self-information	At the present I am twenty seven year old and single, I stay with my parent. My families are six people, have two brothers, younger brother, parent and me. I'm interest to study activities relates to agriculture and forestry matter. Especially, farming organic to promotion, the using modern technique, crop varieties improving such as rice, corn, vegetable and other fruit to increase productivity to demand response for quantity, quality and safe security of sustainable agriculture development.

Name	(Family) (First) (Middle) Bouahom Bounthanom
Nickname	Ning
Area of research	Livelihood, Food security, land use planning and poverty reduction
Please let me know if there are anything you can't eat or you have allergies.	I have no allergy
Shoe size	24.5 (Japanese size)
Self-introduction	I am junior researcher and working for the Agriculture and Forestry Policy Research Center. I worked here since 2006 when I got my bachelor degree from Faculty of Social Science, National University of Laos and I got my master degree in 2010 from Graduate Institute of International Development Studies from Geneva of Switzerland. I am 30 years old. I have two younger brothers and I am the oldest daughter. I stay with my parent's house. I got married in 2011 and I have one kid she is two years and ten months as in the movement stage.

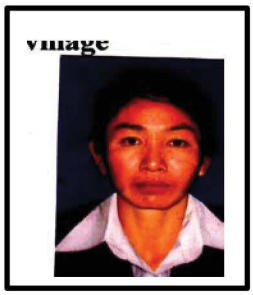


Name	**(Family)** Boualavanh **(First)** Lakhamvone
Nickname	Lak
Area of research	National Agriculture and Forestry Research Institute (NAFRI)
Please let me know if there are anything you can't eat or you have allergies.	I have no allergy
Shoe size	37 size
Self-information	I am 33 years old. I worked here since 2001 to present. I got my bachelor degree of Business Administration from Sengsavanh college in Lao.

Name	(Family) (First) (Middle) Phouthavong phatsany
Nickname	yod
Area of research	
Please let me know if there are anything you can't eat or you have allergies.	I have no allergy
Shoe size	24 (Japanese size)
Self-introduction	I am Head of monitoring and evaluation unit .planning and cooperation division. I worked here since 2008 when t got my bachelor , National University of Laos. I am 28 years old . I have one younger brother and I am the oldest daughter . i stay with my parent's house. I got married in 2009 and I have one kid he is two years old

Name	(Family) (First) (Middle) SOUVANNAVONGSA PHOUVONG
Nickname	VONG
Area of research	Agriculture Research Center
Please let me know if there are anything you can't eat or you have allergies	Non
Shoe size	8 or 39
Self-introduction	My name is PHOUVONG SOUVANNAVONGSA, I work at ARC since 2002 about rice diseases and rice pests

Name	(Family) (First) (Middle) Phomphackdy Saetmany
Nickname	Pack
Area of research	Agriculture Information System
Please let me know if there are anything you can't eat or you have allergies.	I have no allergy
Shoe size	24 (Japanese size)
Self-introduction	I am Technical IT of Agriculture and Forestry policy Research center. I worked here since 2007 when t got my Diploma higher from faculty of forestry, National University of Laos and I got my bachelor of science from Laos sumphanmitmaity college. I am 29 years old . I have three younger sister and I am the oldest daughter . I have lived with my cousin for 7 years ago after that I have been staying in officer dormitory with my younger sister under National Agriculture and Forestry Research Institute . My status is single.



Name	(Family) Chanthala	(First) Khounkham	(Middle)
Nickname			
Area of research	Poultry Production		
Please let me know if there are anything you can't eat or you have allergies.	None		
Shoe size	39		
Self-introduction	My name is Khounkham Chanthala. I am 35 years old. I got married and had two children. My home town is Blikhamxai Province about 100 km from Vientiane capital. I have responsed to take care the day old chicken in poultry farm.		

4. Itinerary

	Date	Time	Activity	Place
Day 1	Mon, 20 Oct.	6:55	Arrive at Chubu Centrair International Airport, Nagoya (Flight VN346)	Chubu Centrair International Airport
		8:30	Arrive at hotel and leave baggage	Hotel Silk Tree Nagoya
		9:00	Visit Nagoya castle	Nagoya castle
		11:00	Orientation at Nagoya University	Nagoya University
		12:00	Lunch	Cafeterias in Nagoya University
		13:30	Tour of the Toyota factory including explanation in English	Toyota factory
		16:30	Back to hotel and chck-in	Hotel Silk Tree Nagoya
		17:30	Get together on the hotel lobby and go to dinner	
		20:00	Night view of a TV tower	
Day 2	Tue, 21 Oct.	7:00	Breakfast	Hotel Silk Tree Nagoya
		8:30	Leave hotel	
		10:30	MUM Port-Flower center	MUM Port-Flower center
		12:00	Lunch: IRAGO VIEW Hotel Lunch buffet	IRAGO VIEW Hotel
		13:30	Low carbon institution in TAHARA City	Low carbon institution
		15:00	"Solar farm TOYOHASHI"Photovoltaic generation institution	Solar farm TOYOHASHI
		18:00	Back to hotel	Hotel Silk Tree Nagoya
		18:30	Dinner at restaurant	
		* For more details in Nagoya activity, please refer to the attached.		
Day 3	Wed, 22 Oct.	7:00	Breakfast	Hotel Silk Tree Nagoya
		8:30	Leave hotel and check-out	
		10:19	Nagoya to Kyoto by Shinkansen	
		11:11	Arrive at Kyoto station	
		12:00	Arrive at hotel and leave baggage	The PalaceSide Hotel
		12:30	Lunch at restaurant	
		15:00	Arrive at CSEAS	CSEAS
		16:00	Participate in a seminar (Speaker: Prof. Lee Chow Yang, University of Science-Malaysia,)	
		18:30	Dinner (Get-together at Tonan-tei)	
		20:00	Back to hotel and chck-in	The PalaceSide Hotel
Day 4	Thu, 23 Oct.	7:00	Breakfast	The PalaceSide Hotel
		8:20	Leave hotel and check-out	
		10:30	Arrive at Maibara-City Office in Shiga prefecture and Welcome	Maibara-City
		11:00	City Office to each farm house	
		12:00	Lunch	
		13:30	Farming experience	
		18:30	Dinner	
Day 5	Fri, 24 Oct.	7:00	Breakfast	Maibara-City
		midmorning	Farming experience	
		12:00	Lunch	
		all afternoon	Farming experience	
		18:30	Dinner	
Day 6	Sat, 25 Oct.	7:00	Breakfast	Maibara-City
		8:30	Each farm house to Maibara-City Office	
		9:00	Arrive at City Office and Farewell Ceremony	
		9:30	Visit "Care center IBUKI"	
		10:20	Vsit Michinoeki (Roadside Station) (This place offers local products)	
		11:40	Arrive at Nagahama city and visit Nagahamashi Hikiyama Museum	Nagahama-City
		12:15	Lunch and shopping (free time)	
		13:50	Visit Yanmar Museum (This museum offers agricultural equipment	
		18:00	Arrive at hotel and check-in	The PalaceSide Hotel
		18:30	Dinner (free time)	
Day 7	Sun, 26 Oct.		Preparation for Workshop held on 27th Oct.	The PalaceSide Hotel
Day 8	Mon, 27 Oct.	7:00	Breakfast	The PalaceSide Hotel
		10:00	Arrive at CSEAS and preparation for Work shop held on 27th Oct.	CSEAS
		12:00	Lunch (free time)	
		13:30	SAKURA Exchange program in Science "International Workshop of Capacity Building for Agricultural Development in Laos"	
		18:00	Dinner at restaurant	
		20:00	Back to hotel	The PalaceSide Hotel
Day 9	Tue, 28 Oct.	7:00	Breakfast	The PalaceSide Hotel
		9:00	Leave hotel	
		midmorning	Visit Ginkakuji and Kiyomizu-dera (These are historic buddhist temple in Kyoto.)	Kyoto city
		12:00	Lunch	
		14:00	Japanese traditional cultural experiences (Kyo-yuzen workshop)	
		18:00	Back to hotel	The PalaceSide Hotel
		18:30	Dinner (free time)	
Day 10	Wed, 29 Oct.	6:00	Leave hotel and check-out	The PalaceSide Hotel
		6:10	Hotel to Kansai International Airport by MK Jumbo taxi.	
		8:30	Arrive at Kansai International Airport	Kansai International Airport
		10:30	Return to Laos by VN321	

5. Program activities

Mr. Yamada Yukihisa
Graduate School of Asian and African Area Studies, Kyoto University
Mr. Phanxay Ingxay
Graduate School of Environmental Studies, Nagoya University

Abstract

NAFRI trainees actively learned about advanced Japanese agricultural technology or management at various institutions or rural villages in Aichi prefecture and Shiga prefecture. Conclusively, each NAFRI trainee organized a workshop in order to give comprehensive presentations about activities in this program.

1. Visiting institutions

In Nagoya prefecture and Shiga prefecture, NAFRI trainees visited several institutions, and they learned about advanced technology to increase productivity as well as challenge to sustainable development.

【Aichi prefecture】

(1) Toyota Motomachi plant

NAFRI trainees joined factory tour in assembly and welding process and they studied TOYOTA's highest standard of technology for producing automobile and so-called "TOYOTA production system". In addition to plant tour, they visited "TOYOTA Kaikan Exhibition Hall". They learned history of TOYOTA and newest challenge to ecofriendly automobile.

(2) Mum port-flower center of JA Aichi Minami

They studied the function of Japanese Agricultural Cooperative (JA) and the distribution process of Mum flower at this center. They actively discussed the characteristics of this center about 3 points below. ① Main labor force at this center is Japanese Brazilian, ② Most of Inspection, classifying and grading processes are automated by machine, ③ Production and quality management are strictly kept by IC card attached to each shipping container.

(3) Low carbon institution in Toyohashi city

They studied the function and purpose of low carbon institutions. At first, they visited "model house" which produces some flower species with low carbon process. The model house uses special roofs made by lagging materials, solar power generation for CO2 reduction, and LED light for controlling flowering. After visiting model house, they went to seedling management facility which provides safe and effective seedling. In this institution, NAFRI trainees learned and discussed agricultural production with good balance between high productive and ecofriendly aspect.

(4) Solar farm TOYOHASHI

NAFRI trainees visited solar power generation panel to learn about solar generation system and its management. They are quite interested in Japanese solar system, because solar power is mainly used only in remote rural areas where people cannot access electricity supply in Lao. However, in Japan, development of solar power is now most getting noticed to ecofriendly challenge in science technology field. In terms of environmental conservation, the solar farm can reduce even 540 Tons of CO_2 per year compare to thermal power generation.

(5) Yanmar Museum

They learned about history of Yanmar Company focusing on how this company has contributed to agricultural development through introduce of mechanization. Here, they actively discussed how to introduce mechanization in Lao, since farmlands are mostly located to mountainous area in Lao, so it is difficult to promote agricultural mechanization. They considered that machinery response to less favored rural area is quite important to agricultural development in Lao.

【Shiga Prefecture】

(6) Care center Ibuki at Maibara city

NAFRI trainees studied how this center plays key role for local care in Maibara city. The purpose of this center is to improve local care at Maibara city which has no hospital. They were interested that this center has advanced medical service including sufficient medical stuffs and medical equipment, even though it is not general hospital. And this center does not only have medical function but also “attendant service” and “nursing home”. They recognized advanced and diversified care functions well respond to local needs.

(7) Roadside station (Michinoeki) of Ibuki no sato shunsai no mori

They learned about promotion of agricultural sales and local development through the Roadside station (Michinoeki) project. They discussed Japanese agricultural distribution system in Japan and how Michinoeki plays important role in improvement of local agricultural management, focusing on putting production information sheet on each vegetable packages, in order to strictly keep so-called “traceability”.

(8) Traditional town and Hikiyama museum in Nagahama city

Center of Nagahama city is one of the most historical area in Japan and there is Hikiyama museum about history and culture in Nagahama city. NAFRI trainees visited center of Nagahama city and Hikiyama museum, and learned about Japanese history and conservation of historical town.

2. Practical training at farm in Maibara city

Maibara city has been implementing rural stay program as local development. NAFRI trainees participated to this program and 4 host farmers there accepted to them. 10 NAFRI trainees were divided into 4 groups (Group A to Group D) and each group practically trained Japanese agricultural activities and management with each host farmer.

Training contents

Group A

Main business of the host farmer are agricultural production and food processing. She integrated business between agricultural production and food processing for value-adding. In response to her business, NAFRI trainees practically trained farm work and food processing.

・Farm work

Group A members practically experienced Japanese agriculture through harvesting persimmons and gingers at her farmland. In addition to harvesting, they discussed agrarian structure of this field village. In this village, community-based agricultural management is active, for instance, farmland possession and distribution are managed

by between small farmers' group.

・Food processing

They made processed food of pickle ginger and rice cake, and packed them for selling. In order to add value of her processed food, she strictly keeps quality management in the process of making. In addition to experience of food processing, NAFRI trainees visited local food processing center to see how farmers collectively undertake food processing. This center is managed by small farmers' group for food processing, and it has developed strong connection to local food market. They learned that marketing of food processing there is well organized and it supports farmers' agricultural management.

<u>Group B</u>

The host farmer is actively challenging so-called "Sextiary sector", combining primary, secondary and tertiary sector for improvement of agricultural management. In response to his business, activities of this group is consistent process of agricultural activities from farm work and food processing to sales.

・Farm work

Group B members harvested radish, cucumber and turnip at his farmland. They actively asked host farmer about the use of chemical fertilizer and pesticide because he is now challenging organic cultivation.

・Food processing

At first, they classified the grade of production, lower graded production is processed in order to add value. NAFRI trainees practically experienced food processing of making turnip pickle at host farmer's office.

・Management

Higher graded production is to be directory sold at JA or roadside station. They are quite interested in the production information (e.g. producer's, production area and quality) is attached to each vegetable, in order to keep so-called "traceability". Regarding

to processed food, it is sold to local food shop and hotel. This group members accompanied to host farmer and visited various sales contact. They considered that his success of agricultural management is based on his diversified marketing and his social networks.

Group C

Main activities of this group are visiting fresh water aquaculture facility and experience farm work at paddy field. In aquaculture facility, they learned about local aquaculture management. At paddy field, they studied and discussed Japanese standard of agricultural production focusing on mechanization.

・Visiting " Sagami Trout Farm"

They visited aquaculture farm, and they studied Japanese fresh-water aquaculture and its management. The function of this farm is not only local leisure facility but also cultivating baby fish and selling them to other facility. This experience must be important experience for them, because development of fresh water aquaculture is quite needed in Lao which is landlocked country.

・Visiting paddy field and experience of farm work

They learned Japanese agricultural production style through practical experience of farm work at paddy field of host farmer. They observed the situation of Japanese agricultural mechanization that land preparation, harvesting and threshing are almost depended on machines. In addition to studying agricultural mechanization, they learned about production of "local paddy species". There are several local paddy species and local farmers make effort for branding their local paddy, like "Akitakomachi". Maibara city also has special local paddy, and farmers are now challenging branding of it. Lao researchers are quite interested in this challenge, in terms of local and agricultural development by means of value-adding.

Group D

Main activities of this group are visiting storage for agricultural machines, experience of intensive Shiitake production and its sales. At first, this group members studied Japanese standard of mechanization at storage for machines. After that, they learned

about specialization of local food and its management in case of intensive Shiitake production of field village.

・Visiting storage for agricultural machines for paddy cultivation

They learned how to use of each agricultural machines. The storage safe-keeps tractors, planting machines, harvesting machines, rice dryers and threshing machines. They compared the gap of agricultural productivity between Japan and Lao from the viewpoint of the situation of mechanization. Productivity of rice is now about 5t/ha in field village. On the other side, it is about 2t/ha in Lao. They discussed that mechanization can improves agricultural productivity and reduce various losses in the process of production, and this is the key for agricultural development in Lao.

・Experience of intensive Shiitake production

They visited a greenhouse for shiitake production managed by host farmer, and they practically experienced shiitake harvesting and sales. This greenhouse holds 10,000 mushroom logs and each log can produce 4000g of Shiitake. At the greenhouse, NAFRI trainees harvested Shiitake and they packed them, and they sold Shiitake to local market by themselves. They attached production information sheet to each package of Shiitake, in order to keep “traceability” in response to consumers’ demands for safety food. They considered that this effort will be quite important in Lao agriculture as well as Japan, in terms of value-adding and response to food security.

3. Research conference and workshop at Kyoto University

NAFRI trainees participated to “joint seminar of Universiti Sains Malaysia and Kyoto University” on 22th Oct. And they organized a workshop and each trainee made

comprehensive presentation about this program on 27th Oct.

(1) Joint seminar of Universiti Sains Malaysia and Kyoto University

All NAFRI trainees had attended to joint seminar of these two university. At this seminar, presentation was given by two speakers from School of Biological Science, Universiti Sains Malaysia.

First speaker, Dr. Swee Yeok FOONG presented quite expertized theme about estimation of past Mangrove ecosystem in terms of Palynology. Second speaker, Prof. Chow-Yang Lee presented interdisciplinary and practical theme about Asian "insect eating", he insisted that enforcement of insect eating habit must be key for solving global food crisis. NAFRI trainees actively exchanged knowledge and opinion with Prof. Lee about insect eating habit in Lao and Asian countries.

This joint seminar would be important opportunity to build international fellowship between Japanese, Lao and Malaysian researchers.

(2) Progress presentation at Work Shop

NAFRI trainees organized work shop for progress presentation of their activities in this program at Kyoto University. At first, each group (from A to D) made presentation, and general discussion including Prof. Kono, Prof. Yokoyama, Prof. Hyakumura, Prof. Nathan, Dr. Hirota and Dr. Tomita was held. Finally, each NAFRI trainees received certificate for completion of this program

① Group presentation by NAFRI trainees

Each group summed up whole of activities of this activities in this program and made conclusion about what is needed for Lao agriculture or how they apply experience in this

program into Lao agriculture. Following passages are about characteristic insistence by each group.

- Group A had concentrated on strength and weakness of advanced technology in Japan. Almost of all farm activities depend on machines in order to save labor input. However, this group also discussed about weakness of machine. For example, high investment cost is needed to use any machine and difficult to hire the educated person who know the way to manage and maintenance machines.

- Group B cleared on marketing and value adding of vegetable. In Japan, producers more easily access to market through Small Medium Enterprise (SMEs) as well as local market. They are not only producers, but they also are sellers and market managers. They produce vegetable then sell it at local market as a form of community member.

- Group C was interested in agro-tourism, in particularly on fish farm. Fish farm includes a wide variety of activities such as research, fish cultivation, sales of fish and leisure facility. They insisted that agro-tourism will be important for agricultural and rural development in Lao in the near future.

- Group D stated that agricultural development in Japan is strongly supported by improvement on infrastructure and active introduce of agricultural machines. On the other hand, they pointed weak points of Japanese agriculture that main labor force is elder farmers and depend on governmental protection by means of high tariff in agricultural trade.

③ General discussion

Each Japanese stuff gave NAFRI trainees comments and questions. The focus of discussion is about how NAFRI trainees recognize Japanese agriculture and rural society, e.g., how Japanese farmers introduce and manage agricultural machine, how NAFRI trainees think main labor force of agricultural sector is elderly, how JA helps Japanese farmers and so on. Finally they compared Japanese agriculture and Lao one, and discussed agricultural development in Lao including technological and social perspective will be quite important.

④ Conferment of Certificate of SAKURA Exchange Program in Science

Finally, Prof. Kono handed the certificate for completion of this program to each trainee.




4. Kyoto culture experience

NAFRI trainees roughly learned about Kyoto history through visiting Ginkakuji-temple and Kiyomizudera-temple, and they experienced “Kyo-Yuzen”, local craft with dyeing processed.

6. Activity report

Group A
Bounthanom Bouahom
Seatmany Phomphackdy
Phatsany Phouthavong

GROUP A PRESENTATION LEARNED FROM TECHNOLOGY DEVELOPMENT AND FARMING EXPERIENCE IN NAGOYA AND KYOTO

1

Bounthanom Bouahom
Seatmany Phomphackdy
Phatsany Phouthavong

ACTIVITIES IN NAGOYA

1. VISIT TOYOTO FACTORY AND MUSEUM

"Eco car are the production of eco-plant and eco-people"

- TOYOTA factory was established since 1956
- No. of employer: 3,600 workers
- Using robots to control welding
- Factory area: 1,600,000 m2

VISIT FIVE MAIN PARTS

Outline of body welding → Production system → Arrangement part in order → Doorless system → Digital picking system

2. VISIT MUM PORT-FLOWER CENTER

- Most of MUM Flower produce in green house
- Established for 20 years ago
- 800 members in cooperative
- 200 members bring MUM to flower center
- Japanese-Brazilian is a main workers in MUM Flower center
- Working hours (8am-7pm)

First point: • Inspector check quality of MUM

Code ID information: • Farmers put the code by themselves (MUM old, specie, grade, name of farmer)

Selection machine: • Class by weight • Long length (>90 cm is high grade and <85 cm is

Cutting machine: • Check and cut stem • Keep it in the water tank (90 minute)

Packing system: • 20 MUM in one box • Keep it into fine stocker room (12

3. VISIT LOW CARBON INSTITUT IN TOYOHASHI

- Low Carbon Institute is getting supported from Ministry of Agriculture of Japan.
- Aims of this institute is to reduce CO2.
- Use red LED for MUM Flower to make it long length as consider for good grade (>90 cm).

High investment cost of LED system but no cost for maintenance

4. VISIT SOLAR FARM IN TOYOHASHI

"to reduce energy and global warming"

- Use the waste area for Solar farm establishment
- Generate electricity to sell to electricity company (supply 300 households at local)
- 242 W per piece of solar
- No. piece of solar: 4,200 piece
- Capacity of power generated is 1,000 KW
- Reduce global warming 540 Ton per year

STRENGTH AND WEAKNESS OF ADVANCE TECHNOLOGY

Strength	Weakness
Women could work in farm and processing center while husband could go to work in the factory	
Using machine is save labour	Difficult to hire the educated worked to manage the machine.
No cost for maintenance	High investment cost to using any machine
Well management and control machine	Long working time for workers to control and manage the machine

JAPANESE RURAL SOCIETY AND FARMING EXPERIENCE IN MAIBARA CITY

1. KOZUHARA VILLAGE, MAIBARA CITY, SHIGA PREFECTURE

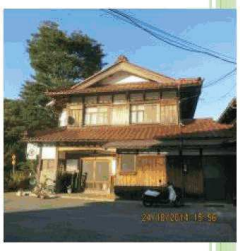
Ms. Tomoko Yamazaki is the host family

Kozuhara is mountainous village:

- It is good place for skiing
- Visit agriculture center and shop local product
- Visit 100 years old of Japanese house style

2. JAPANESE RURAL SOCIETY

- Old people are very healthy and working in the agriculture farm.
- Old women is responsible for all house work (cooking, washing, cleaning, etc).
- Cleaning is very strict
- No poaching concerned
- Help each other
- Awareness system at individual household (when the wildlife will come to village, disaster)
- Japanese people are pay respect of the Buddha and introduce when they have new comers stay at their house



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2. FARMING EXPERIENCE

1. Pick Kaki fruit
   - Pick up the biggest fruit
   - Measure the weight
   - Grade classification

1. Japanese ginger farm experience
   - Dig the Japanese ginger root
   - Japanese ginger cultivation

3. FARMING EXPERIENCE

- 15 households have paddy field with 11 ha *(yield 390kg/1,000 m2).*
- All households in the village have individual vegetable garden
- Self sufficient agriculture
- No fencing vegetable garden (sometimes, widelife animal access to the garden)
- Farmers produced agriculture based in the local community.

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4. Visit the mechanization

- Japanese government support 30% of total machine cost and farmers contribute 70%.
- One community share the machine to each other
- Tractor, transplant machine, apply fertilizer machine and combine harvest.

5. Visit the local processing center

Six old women are group members of processing center.

All of local products sold in the processing center and Mishino local market.

- ✓ Well function of Small Medium Enterprise (SME)
- ✓ Good network and linkage from local product to market.
- ✓ Well management for both processing and marketing.

6. Packing processing experience

1. Packing Japanese ginger
- Put Japanese ginger in to the plastic bag
- Weight measure (130g per bag)
- Air pressure
- Boil in the hot water
- Stick the label and brand of product

1. Moji cooking (rice cake)
- Stem glutinous rice
- Mix glutinous rice with nut
- Put nut with glutinous rice
- Packing

7. Visit IBUKI Care Center

- Located in the center of Maibara city
- Including 3 doctors, 75 nurses
- Having all standard equipments
- Building is well design and suitable for old people.

Main function of IBUKI Care Center

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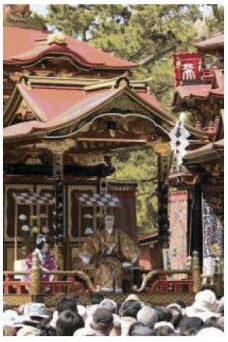
7. Visit Nagohama Hikiyama Museum



The museum displays actual floats that are pulled in the annual Nagahama Hikiyama Festival.

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8. Visit YANMAR Museum

- Yanmar Museum was stablished in 2013
- 100 year anniversary of Yanmar Brand (in 2013)
- Dr. Rudolf Diesel is the first person found diesel engine since 1899
- In 1912, YAMAOKA HATSUDOKI DOSAKUSHO starting production with gas engines.

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Group B
Khamphouvanh Senamountry
Vinaithong Nagavong

SAKURA Exchange program in Science 20-29 October 2014, In Japan Group B Vegetable farm

By: Mr . Khamphouvanh SENAMOUNTRY
Mr. Vinaithong NAGAVONG

Introduction

- General information

Under cooperation among three institutes:
NAFRI,
Kyoto University
Nagoya University

- Period of training (20 – 29 Oct, 2014)
Nagoya 20 – 21 Oct, 2014
Maibara (Shiga) 23 – 24 Oct, 2014

Objective of presentation

- Farm activities (on the job training)
- Results and experience from farm visit
- Lesson learn for Laos agriculture development

Activities

Field trip in Aichi Prefecture

➢ Toyota factory at Nagoya City (first day in Nagoya)

(Source: Internet)

Activities

MUM port-flower center

JA management systems
•JA support fertilizer, technical and seeds to farmers

• JA factory processing cleaning, grading, pecking and selling to in country.

Activities

Low carbon institution

Activities

Solar farm at Toyohashi City

The solar farm's green energy for the future

Activities

Yanmar Museum

Yanmar company have many Produced but machine for agriculture such as transplanting , tractor and other…..

Results and experience

On farm activities

Kabul production system (from farm to table)

Results and experience

Processing (Value adding)

Results and experience

Processing (Value adding)

Production by himself

Kabu mix with salt in the bucket for 2 days

Results and experience

Lesson learn for Laos agriculture development

Production systems

•Farmers in Japan use: -High technology of agriculture, -Use fertilizer -Pesticide	•Lao farmers -Low technology -lack fertilizer -High pesticide
•Yield much be -High quality -Good for health	•Yield -High yield, but taste not so good. -low nutrition, but full is objective

Challenge for Laos farmers
-high price of packing machine
-low price of product
-no local market (lack of market management)

Lesson learn for Laos agriculture development

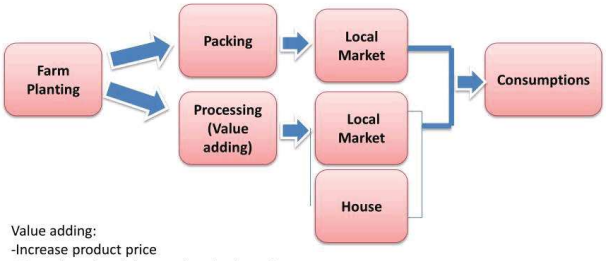
Processing

Information (Ex.)
-Source of product
-Farm owner
-Date of processing
-Price

Lao products (picture)

Apply in to agriculture in Laos

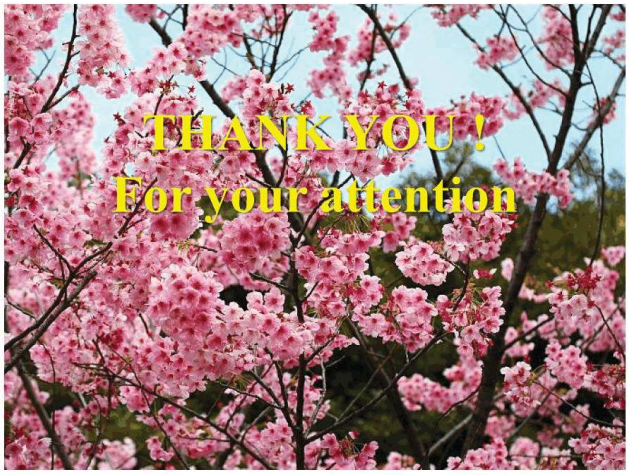
Agriculture production system



Value adding:
-Increase product price
-Time of product is longer than fresh products

Conclusion and recommendation

- Crop production in Japan aims to get good quality rather than yield of product
- Almost producers are belong to private organization other than government
- Good facilities such as irrigation, soil nutrition and others
- Packing need to promote at local farm in Laos
- Local market much be establish under farmer group production
- Local government should be promote organic production



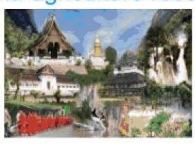
Group C
Phathana Sengounkeo
Phonphiane Louboun Ia

Group C

Agro-tourism and modern technologies

SAKURA Exchange Program in Science, 20-29 Oct.2014 in Japan

Mr Phathana SENGOUNKEO
Horticulture Research Center
Mr Phonphiane LOUBOUN IA
Laungnamtha agriculture research center



Outline of presentation

- Objectives of presentation
- Activities of training program
- Results and experience from field trip
- Applying lesson learn to Lao agriculture
- Conclusion

Objective

The objectives of the field trip would like to improve:

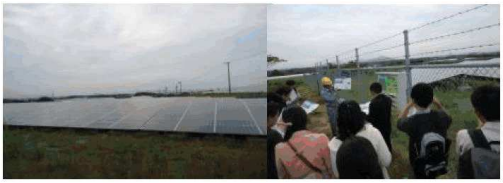
- knowledge,
- Skill
- Culture exchange
- Learn experience from Japanese farmers
- Applying lesson learn to Laos agriculture

Activities Visited

❖ **Process Product of Toyota: stamping, welding, Painting and assembly**

❖ **Process Product of MUM: cleaning, cutting, grading, costing, packing, storage and selling**

Activities Visited



❖ **Management system of solar farm (Nagoya)**

- **Land use sustainable**
- **Reduce CO2**
- **Increase electric energy**

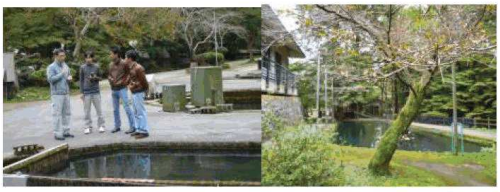
Activities Visited

History of diesel machine

❖ **Activity of YANMAR museum**

- **Process product development of YANMAR**
- **Demonstration**
- **Learning**
- **Society envelopment**

Activities on farm



- **Stream fish farm management (Maibara)**
  - **Water,**
  - **Zoning,**
  - **studying**
  - **and tours**

Activities on farm

Machines learning

- Mechanization **Process Production of rice:**
  - from seed to harvest
  - from harvest to table

Results

How to apply our experience from this program into agricultural development in Lao?

- To combine agriculture and tourist (Agro-tourism)

Not only production, but also on the job training or demonstration area (self learning and self cooking)

In Laos: Location, temperate, water, environment and others

Results

How to apply our experience from this program into Agriculture in Lao?

- Group production (cooperative)
  - Packaging, Transport, Storage and Marketing

Japan

Lao.PDR

Results

How to apply our experience from this program into agricultural development in Lao?

- Technologies such as Mechanism

Plough the soil, irrigation, Planting, Preservation, harvest , Drying, grading, packing

Challenging issues: technical, Irrigation, Land management, road, Seeding

Conclusion

- In Laos, facilities much be improved before apply high technologies such as machine. Ex.,
  - infrastructures
  - irrigation
  - extension workers
- New idea (agro-tourism) much be promote to other private tourism companies or government sector In Lao


Than you for your attention
We would like to thank nice Japanese house farm

Group D
Lakhamvone Boualavanh
Phouvong Souvannavongsa
Khounkham Chanthala

Activity

I. Nagoya Activity
II. Maibara farm

I. Nagoya Activities

- Nagoya city is Located in the heart of Japan.
- The history and has long enjoyed a flourishing culture and economy.
- The area is well known 400 years ago.
- The merger of both Traditional and Modern.

-Nagoya castle: Originally built by Tokugawa leyasu and famous for the pair of golden dolphins on top of its donjon, serves as the region's landmark.

Japanese industry today

❖Toyota factory
- Automation
- Efficiency
- Systems and coordination
- Teamwork
- Export focus

❖ Shinkansen
- Efficiency
- Timeliness and service

Toyota graphic

MUM PORT

- Mum Port is a place for processing flower of farmer member to selling within Japan.
- There are 800 member
- The varieties from Vietnam

Industries in the future

- ❖ Low carbon institution
- ➢ Solar power
  - Use solar replace fuel to reduce Co2
  - Use LED to saving light power
  - The temperature control by computer
  - The varieties from Vietnam
  - Keep at the room 4.5^{0}C (3 weeks)
  - Sell the seedling to farmer
- ➢ Wind power

II. Maibara farm

1. Rice production
   - Total area 45 ha.
   - Yield 4.5 – 5.5 t¥ha
   - Machines for transplanting, Harvesting,

Rice dryer: there are 3 Silo And Milling System.

Milling System can producted 400 bags/day (30kg/bag)

Shitake Mushroom Production

Visited greenhouse for Shitake production, Now they have 10,000 pieces, each piece can provide 4000g. Agelong 6 month.

Shitake Mushroom Production

Every day, they will reap mushroom after that keep it in humidity room for 24 hours to reduce moisture then selected for good Shitake, packing and sell in the local market

Family Garden

Visited family garden, they are growing many kinds of vegetables: cabbage, Japanese cabbage, lettuce, broccoli, spring onion, turnip, taro, sweet potato, tomato, carrot, Chinese radish, radish, chili and garlic . They are growing to cook in their family only.

Rice field:
After harvested rice, they are drain the water from the field for drying the soil. After that prepare the soil and growing soy bean

Compare with Lao agriculture and Japan

➢ Lao Agriculture:
- Small tractor
- Some remote area use plough
- 2 seasons for rice plant in rainy season have lowland rice and upland rice

➢ Lao Agriculture

- Beginning to modernize
  - Simple imported machines (tractors, tillage)
    - Simple machines support services
  - First modern rice varieties in 1990s
    - Often rely on imported varieties
  - Simple crop protection
    - Imported fertilizers and chemicals
    - Simple equipment
    - Low knowledge
  - Less infrastructure for production, transport, storage
  - Few processors

Japanese agriculture

- Modern
  - Many complex machines
  - Many modern varieties
  - Sophisticated crop protection
  - Infrastructure for production, transport, storage
  - Many companies processing product
- Old-fashioned
  - Small holdings
  - Old farmers
  - Rely on import protection
  - Not much export focus

Japanese culture

- Feudal past ⟶ modern present
- Rapid modernization
- Retained culture
  - Discipline and teamwork
  - Dedication
  - Focus
  - Value on education


Thank you very much
for your kind Attention

7. Summary and reflections

"SAKURA Exchange Program in Science" Final report

Bounthanom BOUAHOM

Agriculture and Forestry Policy Research Center, NAFRI

1. The lesson learned from program

I learned a lot from SAKURA Exchange Program in Science that very useful and interesting program to enhance the young NAFRI staffs to learn from Japanese society and advance technology development in Japan.

I learned the rural society culture and lifestyle of Japanese with the host Japanese family as they are very kind and warm welcome. I learned the Japanese cooking lesson, waste management at the kitchen (paper, plastic, wood management) and also making compose from vegetable. I learn from the farming experience that I found only old people are still working on agriculture and vegetable garden for both household consumption and sell as well. I learned that each family have their own vegetable garden which is consider for the organic garden as good for their health and all organic vegetable could serve for their household consumption which is could reduce the cost of living.

I also learned how advance technology development in Japan especially using machine to save labour and time. So, the old labour especially for women labour could work in the factory and processing center which they consider it is not hard work while their husband could work in other factory to control the machine.

I learned how the Small Medium Enterprise (SME) done and successful in Japan. I am really interesting that SME in Japan is well function and well communicate. In each chain is very well linkage between farmers/producers, processing as value added and market. However, the most important thing is the self sufficient that villagers just sell their local products to local processing center and local market with good quality not much consider for the amount and they are happy with their business as the market is available. Regarding to the Japanese government policy that do not promote farmers to have only one crop in large area but they try to promote various kind of crop to ensure that farmers will fact market problem.

In addition, the well cooperation between government, private and farmers is very well linkage and work closely with each other example: farmers buy seed from agricultural research institute and private company worked closely with government research institute and private is the one who buy the local products from farmers.

Each community share the machine with each other as the community machine. Regarding to the Japanese government policy contributes 30% of total cost of machine and farmers contributed 70% this policy is interesting and could encourage local farmers using machine in order to save time and labour as reduce the agriculture input cost.

2. **How to apply your experience of this program into agriculture Laos**

I will apply my experience and lesson learned from this program to my professional career as I am interesting to use the machine for agriculture practices in Lao PDR as Lao agriculture is based on traditional practices very much which considers low technology and Lao farmers is poor to access to the loan to buy machine. However, the Japanese could save labour by using machine to help as labour intensive.

I will keep in mind and consider for the market management that is very important and key issue to successful business. As well as the communication issue between all relevant stakeholders (farmers, Japanese Agriculture, private sector) is also important.

3. **How you evaluate this program**

In overall of this program is excellent that giving a chance for some of young NAFRI staffs to learn more on the agriculture development in Japan and how advance technology development in Japan especially using modern machine.

- The schedule is very tight
- The time management is very well
- The food verities is excellent
- The handout related to program is pretty good

4. **Suggest what kind of activities is most needed when other Lao researchers join this program next year?**

I learn in general of how to manage supply and value chain of agriculture product from farm gate to the market is the most important as related to my personal interesting. Therefore, for the next program should focus more on agriculture supply and value chain training which could enhance the participant understanding and learn how each chain management and challenge and learn how to overcome each challenge that much appreciate to learn from Japanese experience.

Final report

SAKURA Exchange Program in Science
International Workshop of Capacity Building for Agricultural Development in Lao, Date 20 - 29 October 2014, In JAPAN

- **Personal Information**

1) Name: Lakhamvone Boualavanh
2) Country and region: Lao People's Democratic Republic.
3) Organization: National Agriculture and Forestry Research Institute (NAFRI)
4) Position: Researcher
5) Sex: Female
6) Age: 33 years
7) Address (e-mail address): lakhamvon@yahoo.com

1) **What you learnt from this program**?

I have learned lessons from this program many useful particularly tradition and culture of Japanese's, learnt the process of production of Toyota's carwhich it has popular in the country and global, how to manage the administrative of JA group especially flower product in the MUM Port-Flower Center, learnt trial research of floriculture, aims is use solar replace fuel to reduce CO_2 and use red LED for the processing control growth of the flower in the farm at the Low carbon Institute in TOYOHASH, how to reduce energy and global warming from sunlight to be useful in the treatment environment, visited to YANMAR Museum and incorporate various machine for agriculture and industry which is to use this machines popular in the country and global, beside that I was practice on farm activities which is the place popular agricultural production in Maibara city, so the practicing with farmer in Japan Learn about modern rice mill, a grain that can be selected. Know about mushrooms (SHITAKE). After that to the processing package, to the local market and processing value adding to the distribution in local market to consumers, concluding of this program has knowledge to manage the administration and organization of cooperative farmer group which has farmer successful for agriculture systems in Japan.

2) How you apply your experience of this program into agriculture in Lao?

When based on the topography between Japan and Laos are more different on the climate, so that I will apply experience to learnt from this program to use in agriculture sector in Laos, in the way crops organic and processing value adding from vegetable to income, the first step is a consultation with the organizations in agriculture sector to planning, then the training to farmers who are interested, after the farmers will have trained, the staff will have to evaluations closely, in the future if the staff always have been training system and technique from Agriculture sector in Japan, I believe that the farmers will have a management system so well and people will have to healthy as the same people in Japan who have healthy.

3) How you evaluate this program?

- This program is an appropriate for human resources development in the agriculture sector.
- Teacher are clearing for explain to participant all activities.
- The time is an appropriate for training in this program.
- There should be this program all year.

4) Suggest what kind of activities are most needed when other Lao researcher join this program next year?

National agriculture and forestry research institute (NAFRI) are most need for Lao researcher development, so I think that there should be more need activities about rice research, Fisheries research, Irrigation, livestock research and forestry research in this program next year.

Final report

SAKURA Exchange Program in Science

International Workshop of Capacity Building for Agricultural Development in Lao, Date 20 - 29 October 2014, In JAPAN

A. Personal Information		
1) Name:	NAGAVONG Vinaithong	
2) Country and region:	Lao Peopleís Democratic Republic.	
3) Organization	National Agriculture and Forestry Research Institute (NAFRI)	
4) Position:	Researcher	
5) Sex:	Male	
6) Age:	2	years
7) Address (e-mail	Rnagavong@gmail.com	

1) What you learnt from this program?

I have learned lessons from this program many useful particularly tradition and culture of Japaneseís, learnt the process of production of Toyota's carwhich it has popular in the country and global, how to manage the administrative of JA group especially flower product in the MUM Port-Flower Center, learnt trial research of floriculture, aims is use solar replace fuel to reduce CO2 and use red LED for the processing control growth of the flower in the farm at the Low carbon Institute in TOYOHASH, how to reduce energy and global warming from sunlight to be useful in the treatment environment, visited to YANMAR Museum and incorporate various machine for agriculture and industry which is to use this machines popular in the country and global, beside that I was practice on farm activities which is the place popular agricultural production in Maibara city, so the practicing with farmer in Japan learnt use fertilizer, low pesticide for health of the planting tuber species (Radish), the maintenance to harvesting, after that to the processing package, to the local market and processing value adding to the distribution in local market to consumers, concluding of this program has knowledge to manage the administration and organization of cooperative farmer group which has farmer successful for agriculture systems in Japan.

2) How you apply your experience of this program into agriculture in Lao?

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3) How you evaluate this program?

- This program is an appropriate for human resources development in the agriculture sector.
- Teacher are clearing for explain to participant all activities.
- The time is an appropriate for training in this program.
- There should be this program all year.

4) Suggest what kind of activities are most needed when other Lao researcher join this program next year?

National agriculture and forestry research institute (NAFRI) are most need for Lao researcher development, so I think that there should be more need activities about rice research, Fisheries research, Irrigation, livestock research and forestry research in this program next year.

Final report

SAKURA Exchange Program in Science

International Workshop of Capacity Building for Agricultural Development

In Lao, Date 20-29 October 2014, In JAPAN

A. Personal Information

1. Name and Surname

PHOMPHAKDEE Saetmany

2. Country and region

Lao people's Democratic Republic

3. Organization

National Agriculture and Forestry Research Institute (NAFRI)

4. Position

Technician

5. Sex

Female

6. Age

29

Years

7. E-mail Address

Packky_99@hayoo.com

This program is the most important for participants of capacity building for agricultural development in Lao. Attending on this program I have learned scientific and technological many usefulness including production Agriculture, traditional culture and economic and society of the Japan country. Learn about processing of production TOYOTA by using robots to control welding was five main parts (out line of body welding until digital picking system) to save labor, Administrative management are setting up in the group of flower product in the MUM Port-Flower center, Explain to research of floriculture was low Carbon institute is getting supported from Ministry of Agriculture of Japan (Aims of this institute is to reduce CO2 and use red LED for MUM flower to make it long length as consider for good grade) in TOYOHASH, Learned to applied energy from sunlight to reduce energy and global warming (use the waste area for Solar farm establishment). On the field we have exchanged experience with framer's Japanese rural society and farming in MAIBARA City and to learned livelihood them, there are many old women have done working in the agriculture farm (cultivate for

ginger planting, harvesting Kaki fruit were selected the biggest, grade classification and packing). I have knowledge of process production agriculture Japanese's framer has successful, effetely system and sustainable.

The procedural production agriculture efficient in Japan whatever Agriculture sector in Laos is difference when I was joint this program, I have been knew improvement and development of the farming system. So I will be apply to local community, explain and extend to framer who to be production agriculture particular organic frame group, to set up is technique strong group of step processing have quality and good for healthy, to upper cost and high income will be make livelihood their better then. I think that it is so well for extend technician If they were advance and successful of the product.

Opportunity is greater for develop human resource of youth Exchange program in Science. Also teacher is very kindly and good quality cooperation, participants are difference the responsibility section. I would like to request for this program should be select technique the same section to learning is fit on the field. However period is short time but teachers were identically explain to participant all activities.

National Agriculture and Forestry Research Institute (NAFRI) are most need capacity building of technique researcher, wherever development agriculture are sustentacular in the future. I think that is possible to should be more learner than management sustainable Agriculture.

Thank you very much for your help and cooperation I hope that we will join working again.

Date……..
Place, Vientiane Capital
Reporter by:
Signature
PHOMPHAKDEE Saetmany

Lao People's Democratic Requblic
Peace Independence Democracy Unity and Prosperity
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Ministry of Agriculture and Forestry
National Agriculture and Forestry Research Institute
Loungnamtha Agricultural Research Centre

Final report
SAKURA Exchange program in Science, 20-29 Oct 2014 in Japan

Introduction

Lao PDR is a country that borders the sea, located in the East South Asia Center sharp Indochina and proximity to Cambodia as Myanmar, Thailand, Vietnam and China.

The country has a population of about 7 million more than the 85% of the population steer the production of agricultural structures buried - livestock production agriculture to produce primary location, lack of equipment that modern helped to produce, the weather does not allow easy Some really dry, pest damage done to meet the food out to consumers in the mountains especially vegetables

1. What you learnt from this progam?

- How to use machine in agriculture based on the area for reducing worker.
- Learnt about organization, making plan, method and step of agriculture such as planting vegetables and planting Japan rice.
- Learnt how to manage after harvest such as choosing, packing marketing.
- Learnt how to produce power from solar and reduce CO_2 the air.
- Develop agriculture as tourist site base on nature.
- Learnt Japanese culture, life style and visit some important places.

2. How you apply your experience of this program into agriculture in Lao?

- I am able to use some lessons which are suitable with the environment and some techniques of agriculture in Laos aspecially in Luangnamtha such as use machine in agriculture, organize agriculture village and sale, beside that I will try to develop the agricutre as a tourist site.
- Moreover, I also adapt some technique in how to produce solar and make plastic house for planting in raining season.

3. How you evaluate this program ?

- It’s a good relationship which is giving the opportunity to Lao staff for studying high technology, organizing agricultural planting to successful.

- I’t is the best cooperation between Lao government and Japan to give the value lesson for Lao staff gain more knowledge of agriculture and use in Laos.

4. Suggest what kind of activities are most needed when other Lao researcher join this program next years?

- Loungnamtha Agricultural Research Centre are most need activities about rice research, fish research, vegetables resaerch and livestock research.
- study deeply in each step and method of using machine in agriculture from starting plant to marketing
- Develop agriculture as tourist site such as doing animal farms and planting.

Phonephiane LORBOUN-IA
E-mail: phonephaine@yahoo.com

Final report

SAKURA Exchange Program in Science

International Workshop of Capacity Building for Agricultural Development in Lao, Date 20 - 29 October 2014, In JAPAN

A. Personal Information

1) Name:

Ms. PHOUTHAVONG phatsany

2) Country and region:

Lao People's Democratic Republic.

3) Organization

National Agriculture and Forestry Research Institute (NAFRI)

4) Position:

Researcher

5) Sex:

FeMale

6) Age:

28

Years

7) Address (e-mail address):

Phatsany.p@gmail.com

1) What you learnt from this program?

I learned alots from program will which is very useful for me to learn from advanced technology development in Japan and I have learned the TOYOTA factory and museum, Toyota factory was established since 1956 Toyota's carwhich it has popular in the country and global, learned to MUM Port-flower center Japanese-Brazilian is a main workers in MUM flower center, learned to Low Carbon Institute in TOYOHASH low carbon institute is getting supported from Ministry of agriculture of japan, learned to Solar farm in TOYOHASHI to reduce energy and global warming, learned.

I have learned lessons in KOZUHARA village, Maibara city, SHIGA prefecture It is good place for skiing learned to agriculture processing center and shop Local product, learned to farming experience: Japanese ginger farm experience, dig the Japanese ginger root, Japanese ginger cultivation and pick up the biggest fruit , measure the weight, Grade classification. Learned the Local processing center: all of local products sold in the processing center and mishino market: packing Japanese ginger and Mogi cooking (rice

cake), Visit to Ibuki care center, Nagohama Hikiyama Museum and Yanmar museum,also I have very good experience to satay with Japanese family and cook japan food and learned from Japanese rural society. So I wiil being all the lesson learned especially for the farm management which link to the market as vary well function and good model to learn and apply for lao agriculture development.

2) How you apply your experience of this program into agriculture in Lao?
When based on the topography between Japan and Laos are more different on the climate, so that I will apply experience to learnt from this program to use in agriculture sector in Laos, in the way crops organic and processing value adding from vegetable to income, the first step is a consultation with the organizations in agriculture sector to planning, then the training to farmers who are interested, after the farmers will have trained, the staff will have to evaluations closely, in the future if the staff always have been training system and technique from Agriculture sector in Japan, I believe that the farmers will have a management system so well and people will have to healthy as the same people in Japan who have healthy.

3) How you evaluate this program?
- This program is an appropriate for human resources development in the agriculture sector.
- Teacher are clearing for explain to participant all activities.
- The time is an appropriate for training in this program.
- There should be this program all year.

4) Suggest what kind of activities are most needed when other Lao researcher join this program next year?
National agriculture and forestry research institute (NAFRI) are most need for Lao researcher development, so I think that there should be more need activities about rice research, Fisheries research, Irrigation, livestock research and forestry research in this program next year.
Thank you very much for you help and cooperation I hope that we will join working again

Date…….
Plac, Vientiane capital
Reporter by:
Signature
PHOUTHAVONG phatsany

Lao people's democratic republic

Peace Independence Democracy Unity and Prosperity

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Agriculture Research center

Date 2/12/2014

Final report of " SAKURA Exchange program in Science"

1. Trip objective

   The objectives on this program are exchange and shear experience in science from Japan to apply using in Lao PDR in the future.

2. What can I learnt from this program

   From this program I can took the new technique for improved my experience especially for agriculture model such as saw the high technology about Toyota factory it was very high quality of factor large export. Therefore went to MUM port flower center issue the management system which support fertilizer, technical and seeds to farmers after JA will processing flower to market, they put ID information species, grade and name of farmer by they were selected grade by machine such as weight and plant upper 90 cm and cleaning grading, pecking and selling to in Japan.

   After that went to Low carbon institution they used the Solar energy for plantation for flower by LED lamp for control flower growing, aims of this institute is to reduce CO_2, they import the yang plant from Vietnam to cultivated in the nursery.

   The next studied Solar farm at Toyohashi to reduce CO_2 and global warming around 540 ton per year by used the waste area for solar farmer make from sunlight and have been to sell to Electricity Company. Therefore they can useful this areas because this area were garbage storage and the soil can't use for agriculture.

   On farm activities can leant production system from rural farmers at MAIBARA city (in Japan) I have knowledge about agriculture production system used high technology for plantation the KUBUT and clean agriculture by used low fertilizer and pesticide they has low cost in their farm, they used this system in household for their family start from planted by them self and harvested after that they has packing and transfer to local market. Hence, their farmers were processing KUBUT in their family for value adding and transfer to local market too.

3. How can I apply experience of this program into agriculture in Lao?

   For my experience from this programmed such as on farm activities from Japan I will try to apply in agriculture in Laos by farm planting used the low fertilizer and least pesticide or possible to planting organic farm is better good produce, clean and good healthy and using the machine to production system low cost, save the time and get the high yield and them income. Therefore, extension the Lao farmers to packing should put the information such as name of species, date and local production and farmer name, processing in their farm for value adding.

   For the solar farm to clean energy from sunlight should apply to use for agriculture such as in the vegetable farmer or corn greenhouse because in have been the much sunlight and take the machine to cover on plantation system to high yield and high quality for supply to factory.

4. How can I evaluate this program?

   I evaluated this program are very good i saw and learn from factor activities learning by doing. Some activities can be using at Laos in the future.

   We are very happy and impressive from this program because the Japanese are kindly, they were welcome and take care us hole trip especially the staff were good take care and the farmers were welcome too went we stay at them house.

   This program was very importance for the Developing countries especially for Lao PDR don't have the high technology using in the agriculture. Increase the knowledge about agriculture system and many practices to learn especially using the sunlight and solar sell to improve the low cost in farm.

5. Suggest what kinds of activities are most needed when other Lao Researchers in this program next year.

   Action plan 1: Farm activities are long time more than this year as such as learning by doing with farmers together.

   Action plan 2: Next time participant need to learn more such as went the participant will exchange to stay or exchange group because participant to learn another lesson

6. Finally I wish acknowledge all of people who assisted, invaluable help and take care me during my trip in this program and I would like to thanks Nagoya University and Kyoto University for financial support for any things for this trip going well and successful.

Report by:

Khamphouvanh SENAMOUTRY

Lao People's Democratic Republic
Peace Independence Democracy Unity and Prosperity
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Ministry of Agriculture and Forestry
National Agriculture and Forestry Research Institute
Horticulture Research Center

Final Report
SAKURA Exchange Program in Science, 20-29 Oct.2014 in Japan

1. Introduction

- Lao economy is heavily depends on natural resources and agricultural production. About 85% of Lao people depend on agriculture and fisheries as a basis of their livelihood and agricultural production employs over 80% of labour force
- Limited vegetable production and poor quality in the rainy season (off-season production) due to high humidity, high diseases and pest occur
- Irregular weather (Extreme drought and flood conditions) are frequently events due to influence of climate change
- Poor soil quality (Soil acidic (pH 3.5-4) in some area, low organic matters, etc.), soil erosion and nutrient loss due to heavy rain
- Water management in vegetable production field is not efficiency
- Increasing price of labors and affect to increase price of vegetable products, high input of cultivation
- Dry season, over harvest, low price, low income, poor information of vegetable marketing
- The knowledge of pesticides use of farmers is still limited, chemical peptides residues in vegetable produce is lack of information and guidance.
- The knowledge of post-harvest and processing technologies of vegetable are weakness in the producer, trader, and researchers

2. Objective

The objectives of the field trip wold like to improve knowledge, skill, culture exchang, Laarn experience from japanese farmers and applying lesson learn to Laos agriculture

3. Activity
   - Visiting TOYOTA factory learning about process product of TOYOTA such as stamping, welding, Painting and assembly
   - Visiting MUM Port Learning about process product of MUM such as cleaning, cutting, grading, costing, packing, storage and selling
   - Visiting solar farm learning about management of system of solar farm such as Land use sustainable Reduce CO_2 and Increase electric energy
   - Visiting YANMAR museum learning about activity of YANMAR museum such as Process product development of YANMAR, Demonstration, Learning And Society envelopment
   - Visiting Shiga prefectural fisheries experimental station learning about stream fish farm management such as water, Zoning, studying and tours
   - Visiting and working on farmer field learning machine about Mechanization Process Production of rice, from seed to harvest and from harvest to table

4. **Result**
   - To combine agriculture and tourist (Agro-tourism) not only production, but also on the job training or demonstration area (self learning and self cooking)
   - Group production (cooperative) Packaging, Transport, Storage and Marketing
   - Technologies such as Mechanism such as Plough the soil, irrigation, Planting, Preservation, harvest , Drying, grading and packing

5. **Conclusion**
   - In Laos, facilities much be improved before apply high technologies such as machine. Such as technical, infrastructures, irrigation and extension workers
   - New idea (agro-tourism) much be promote to other private tourism companies or government sector In Lao

Phathana SENGOUNKEO

Final report of "SAKURA Exchange Program in Science

1. What you learnt from this program.

I have leaned many things in Japan (NAGOYA and KYOTO): During this training, I have got a chance to observe some Japanese cultures, traditional foods, Japanese life and style.

- Maibara farm

- Technic to do Agriculture to get high yield by used lest labor, apply modern machines, modern varieties and Crop protection

- Open up my mine to high agriculture machines county

- Some activities very interested

- Japanese culture: very modern fashion and retrained culture. Japan population very kinds and polite, very beautiful country.
- Industries factory
- Kubota museum

2. How you apply your experience of this program into agriculture in Lao.

- As my task is researcher, so I will do more research on rice to contribute for high yields and try to advocate famer in Laos to apply modern machines

3. How you evaluate this program.

- Too short to exchange experience together with farmer

- Give half a day\ a day before start activities

4. Suggest what kind of activities are most needed when other Lao researchers join this program next year.

- Visited farm and spend more time with there to learn more

8. Review comments

Prof. Satoshi YOKOYAMA
Graduate School of Environmental Studies, Nagoya University

In the SAKURA Exchange Program in Science, trainees from the National Agriculture and Forestry Research Institute of Laos (NAFRI) had experienced two different types of Japanese agriculture during their stay in Japan. First, they had inspected the highly industrialized agricultural area which is cultivated by forcing cultivation of chrysanthemum (mum) in the Atsumi Peninsula of Aichi Prefecture. Second, they joined the agriculture experience program of Maibara City in Shiga Prefecture.

I had been in charge of the first half of the program, from first day to forth day (October 20-October 23, 2014), which planned a mainly inspection of a high-technology industry area near Nagoya. Therefore I would like to mainly review this program focusing on the highly industrialized agriculture area in the Atsumi Peninsula of Aichi Prefecture.

Before making a comment on this program, I briefly introduce some agricultural characteristics of the Atsumi Peninsula area. The Atsumi Peninsula area is definitely one of the leading agricultural area for the open-air cultivation of vegetables and the greenhouse cultivation of flowers in Japan, and has evolved into an area devoted to the mega-production of cabbage, melon, tomatoes, and chrysanthemums since the 1980s. At present, the Atsumi Peninsula (Tahara City) accounted for about 40% of Japan's market share of chrysanthemum production. Farmers successfully achieved year-round chrysanthemums greenhouse cultivation in the mid-1980s. Since then flower farmers have continuously adopted new techniques for flower cultivation to increase farm productivity and to withstand inter-regional and international competition. The JA Aichi Minami (agricultural cooperative) has played an important role in the formation of a mega-production area for their products by its construction of automatic distribution factories called "the Mum port" that encouraged growers to expand production in 1997. It also expanded marketing to urban areas in Tokyo, Osaka and Nagoya.

Trainees from NAFRI visited to the Mum port of the JA Aichi Minami (Photo) in Tahara city and observed leading-edge automated flower distribution system. This observation was not intended to encourage the introduction of the most advanced technologies to Laos. We hope that more trainees will be interested in the relationship between agricultural cooperatives and farmers. By starting up the Mum port of the JA Aichi Minami, farmers have succeeded to put chrysanthemum on the market with stable size and good quality. As a result, the demand for chrysanthemum cultivated in the Atsumi Peninsula has been increased, so that it was possible to improve the profitability of chrysanthemum growers.

Photo Mum port of the JA Aichi Minami

Although individual farmers' efforts are of course important for the increase in income, it is indispensable to cooperate and collaborate within the area. Individual farmers' efforts alone cannot fully achieve raising the quality and developing the sales channels of chrysanthemum. in individuals is limited. It is important to tackle the improvement productivity in local community level.

In the case of Laos, the local market of agricultural products is not well developed. At present, a form of contract farming for neighboring countries is widely seen, and initiative of agricultural development is in the hand of the neighboring countries. In the future, Laos must take the initiative to raise the level of agricultural technology, and also to develop a new agricultural market.

Through the SAKURA Exchange Program in Science, we think that trainees from NAFRI could learn efforts of individual farmers, the existence of organizations such as JA (agricultural cooperatives) to support local farmers, and development of local market in Japan. We hope that they will apply their experience in Japan to agricultural development of Laos.

Dr. Hyakumura Kimihiko
Institute of Tropical Agriculture, Kyushu University

My observation is that despite being a only ten days long, this youth exchange program was a valuable experience for Lao participants, by including homestays at farmers' homes in Shiga Prefecture, observations of technology, farm machinery and flowering plants in Aichi Prefecture, and classroom lectures and discussions at both Kyoto University and Nagoya University. I believe this program provided many learning opportunities to participants.

Participants observed that Japan and Laos have different natural, economic and social conditions. It was understood that some Japanese technologies and systems could not be applied in Laos due insufficient capital. Japanese agricultural systems may initially appear to have certain advantages in practice, but when we consider Lao natural and social conditions, some Lao systems may be more appropriate in practice than Japanese ones. Some Japanese systems involve complex processes, which may pose challenges when attempting to introduce them directly in Laos. More discussion is advised regarding the merits and suitability of Lao and Japanese agricultural systems in Laos.

Participants and noted that the aging of society in rural areas of Japan poses big challenges in terms of successors of farms. Many developed countries already face this problem, but in the near future these challenges may arise in Laos as well. For this reason, the Japanese situation may stimulate consideration among Lao participants regarding the future of agriculture in their own country.

I noticed that only a limited number of participants expressed their own thoughts in the general discussion on the final day. It seems that they may have hesitated to state their opinions due to limited English skills, but I would encourage them to make a good effort in the future, even if they feel their language skills are limited.

About this program

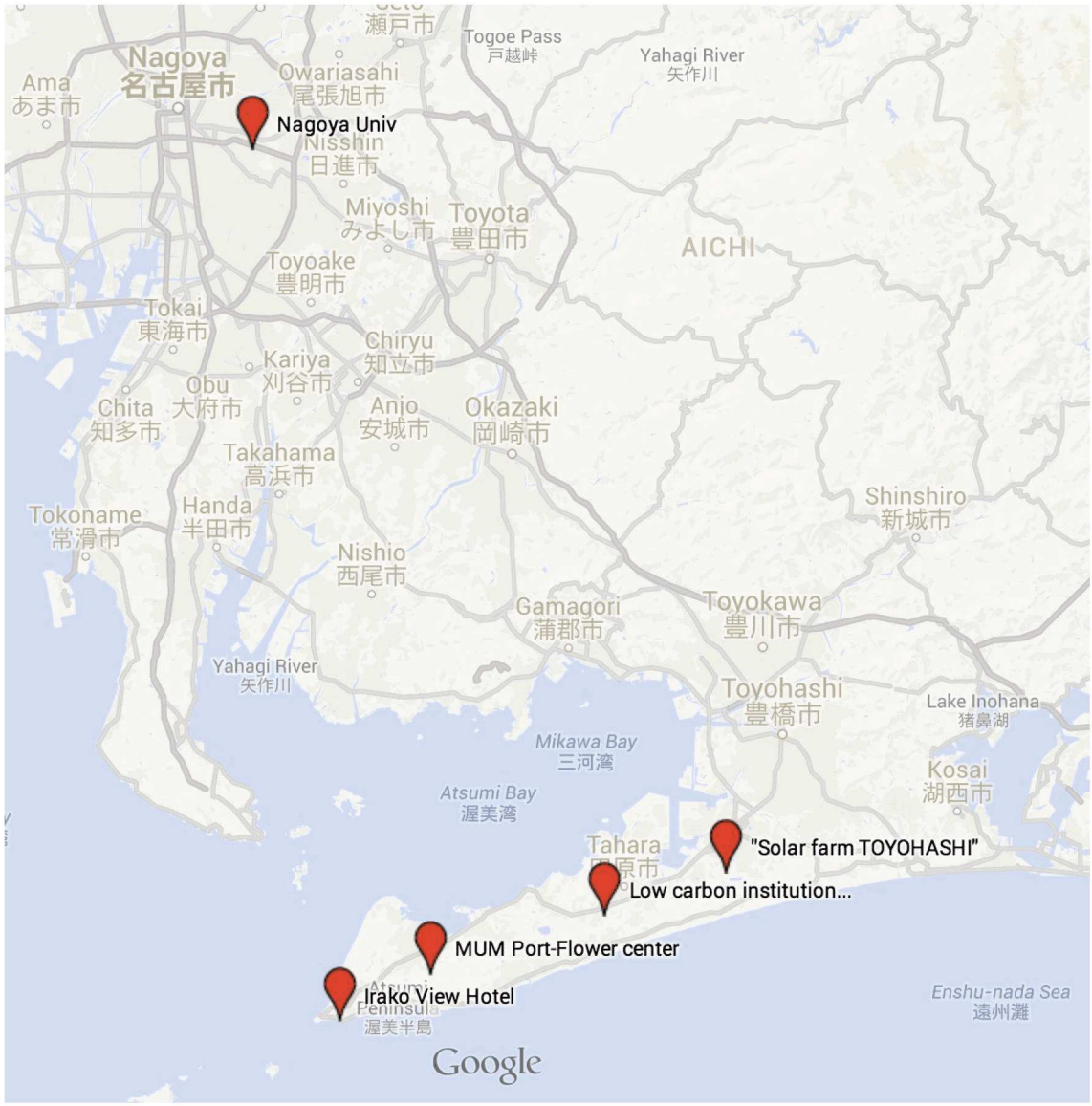
The participation of several invited universities was a unique aspect of this program. Although Kyoto University and Nagoya University are research-oriented universities, their involvement in exchange projects such as this one creates opportunities for them

to add value. This exchange program also created opportunities for closer relations between the host university and the Lao organizations that sent the participants.

Although the exchange period was only ten days, I am sure that the host university had a lot of work to do. As part of past JICA training courses, I have prior experience as coordinator when my university was a host institution, and from that experience, know that preparation for a program like this is cumbersome. For JICA training courses, JICA does provide support such as assistance with transportation costs and interpretation services, to reduce the burden on the host university. On the other hand, as host organization, the Sakura Science Program bore a heavy work load to prepare all activities. In this exchange program, participants were divided into four groups for specific activities, and the university put a responsible person in charge of each group.

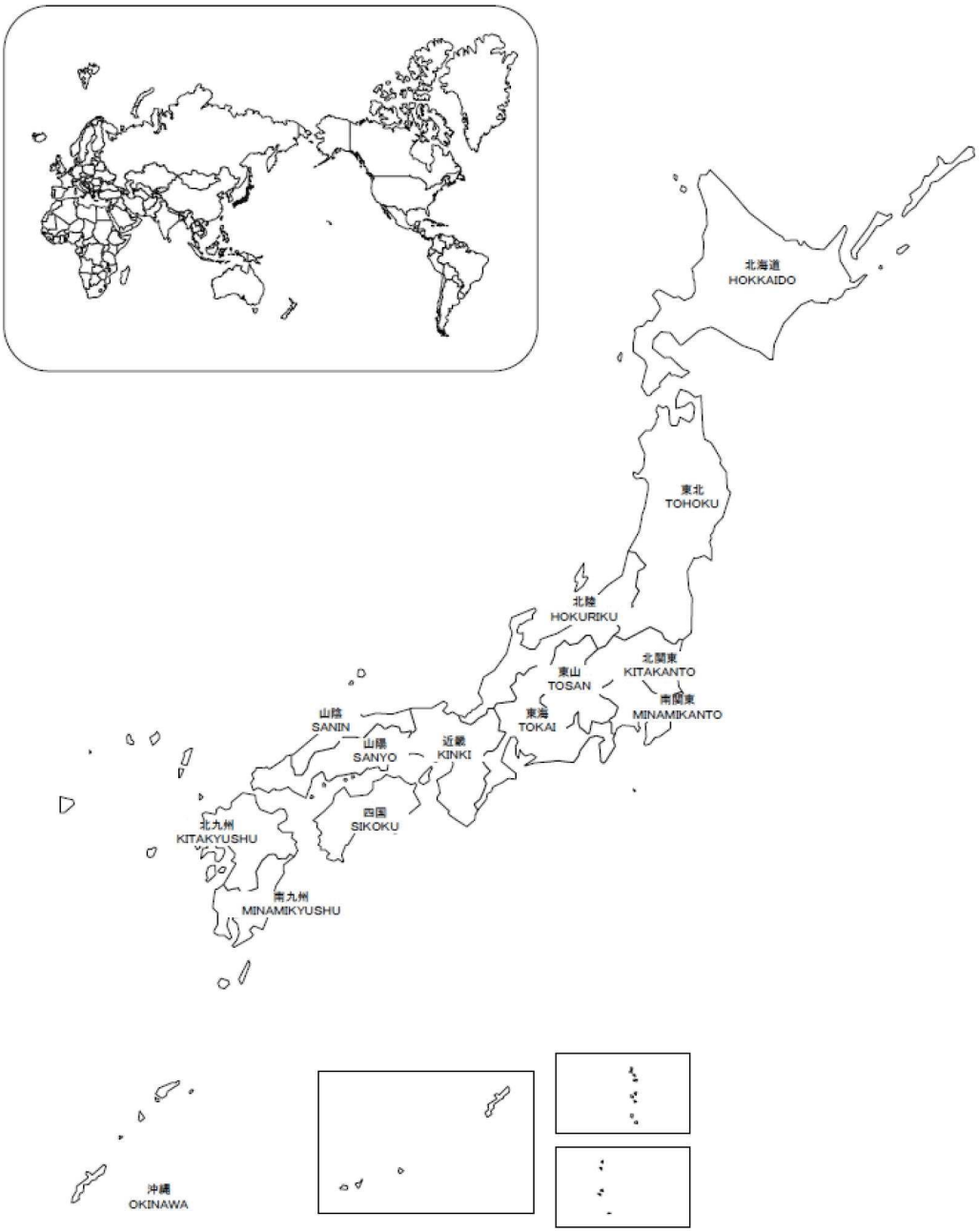
I only participated in the last day of this exchange program, but hearing the participants' presentations, I could see that the preparations by the host university had been carried out conscientiously and that most participants were satisfied with the experience. For the invited universities as well, this program has been a valuable experience, and I hope that programs like this will continue to be implemented in the future.

Appendix 1. Lecture materials



One-day Excursion Route and Location of Atsumi Peninsula.
(Source: Google Maps.)

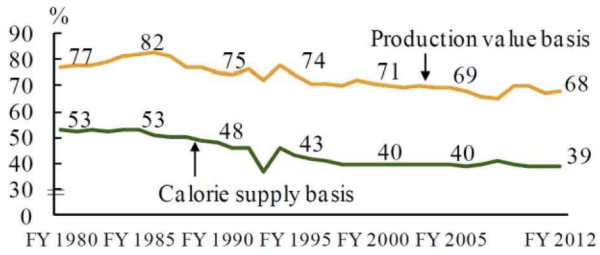
Map of Agricultural Regions in Japan



Notes:

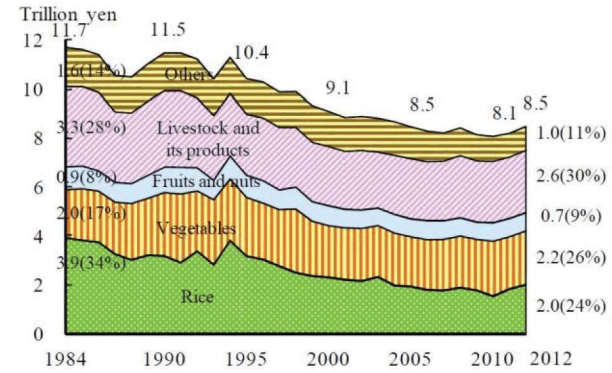
1. Prefectures refer to all areas of Japan, excluding Hokkaido.
2. The 47 prefectures (administrative units) are grouped into 14 agricultural regions based on similarities in agricultural management.

1-1 Agricultural Production



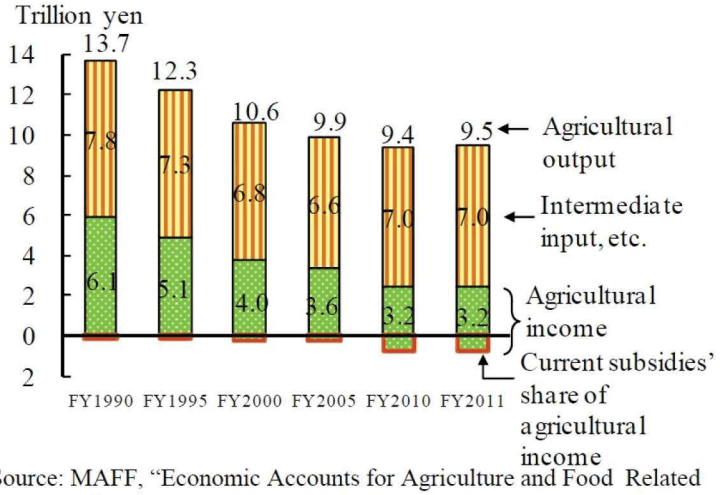
Source: MAFF, "Food Balance Sheet"

Figure 1. Japan's food self-sufficiency ratio trends



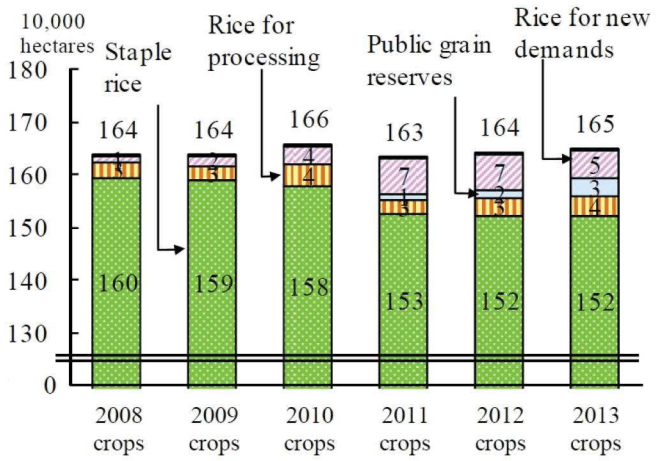
Source: MAFF, "Statistics of Agricultural Income Produced"
Note: 1) Others covers wheat and barley, miscellaneous cereals and pulses, potatoes and sweet potatoes, flowers, industrial crops, other crops and processed agricultural products.
2) In parentheses are percentage shares of total agricultural output.

Figure 2. Changes in total agricultural output



Source: MAFF, "Economic Accounts for Agriculture and Food Related Industries"
Note: "Intermediate input, etc." covers intermediate input (costs of goods (including materials) and services required for production), fixed capital consumption and indirect taxes.

Figure 3. Changes in agricultural output value and agricultural income (net agricultural production)



Sources: MAFF, "Statistics on Cultivated Land and Planted Area;" MAFF surveys

Figure 4. Changes in total rice-planted area including paddies subject to early harvests

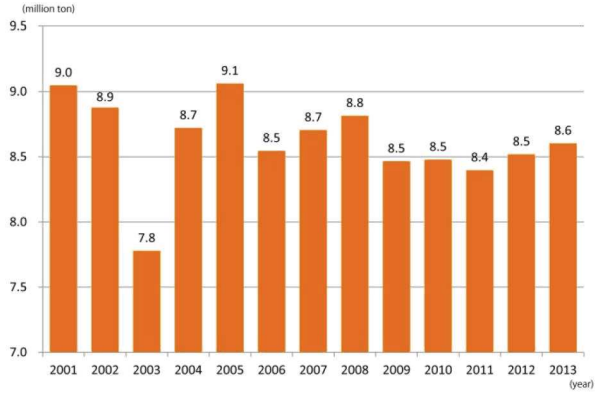
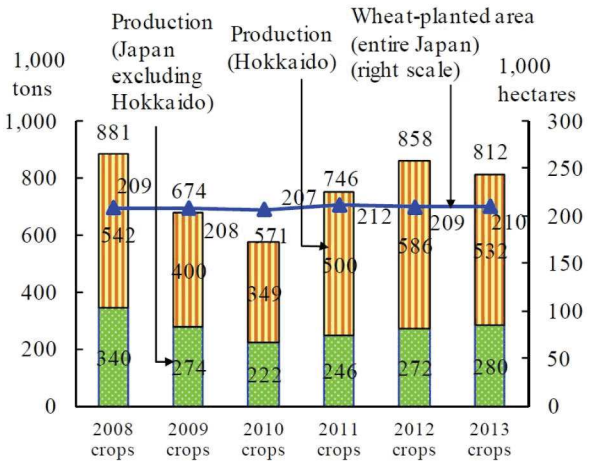
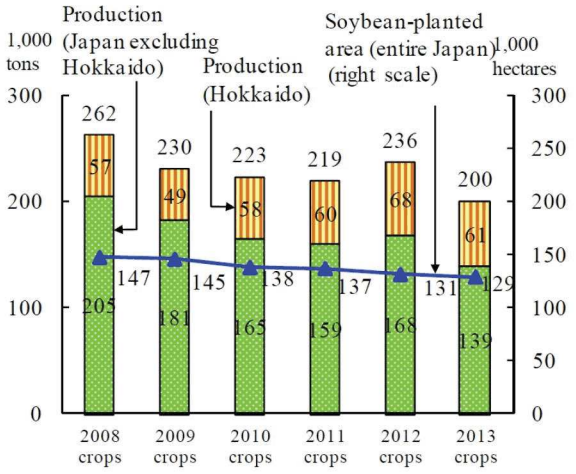


Figure 5. Changes in production of puddy rice



Sources: MAFF, "Crop Statistics"

Figure 6. Changes in wheat-planted area and wheat production



Sources: MAFF, "Crop Statistics"

Figure 7. Changes in soybean-planted area and soybean production

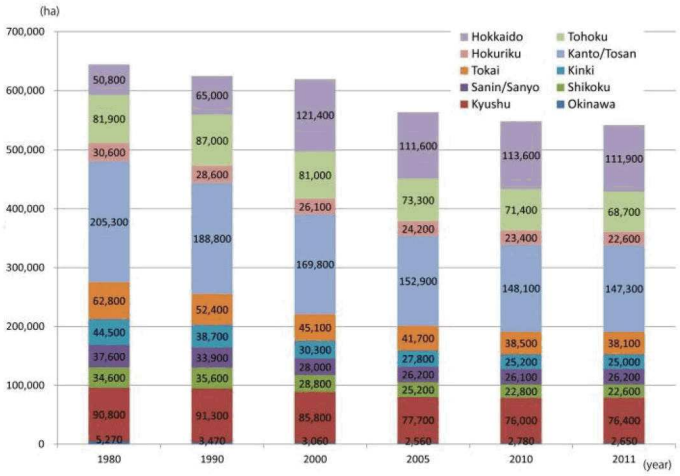


Figure 8. Changes in vegetable-planted area by agricultural regions

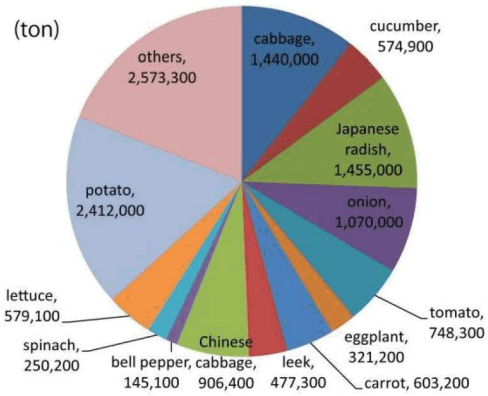


Figure 9. Major vegetable production (2013)

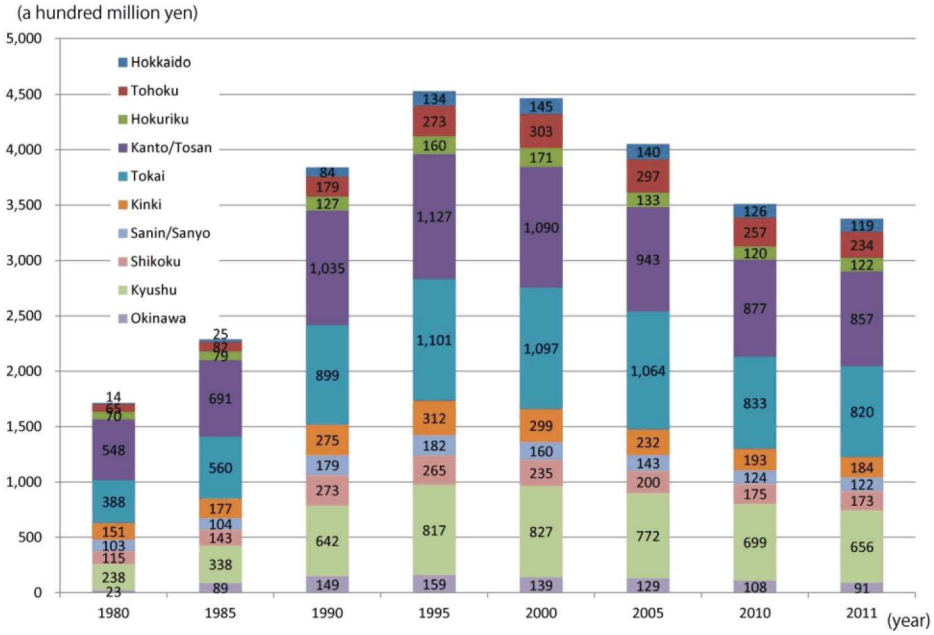


Figure 10. Changes in flower production by agricultural regions

1-2 Farmers/Farm Households

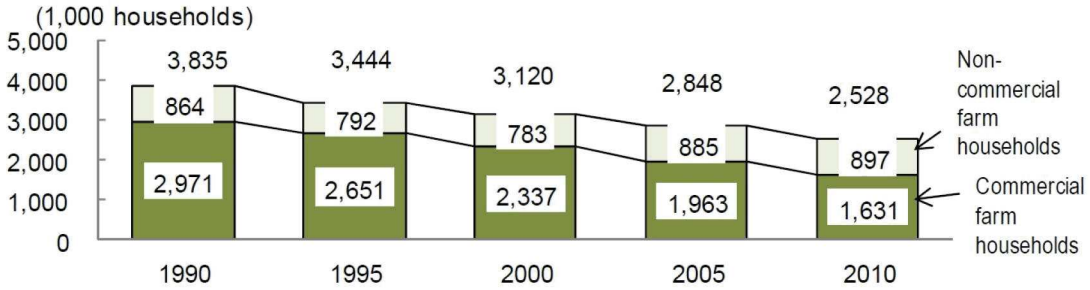
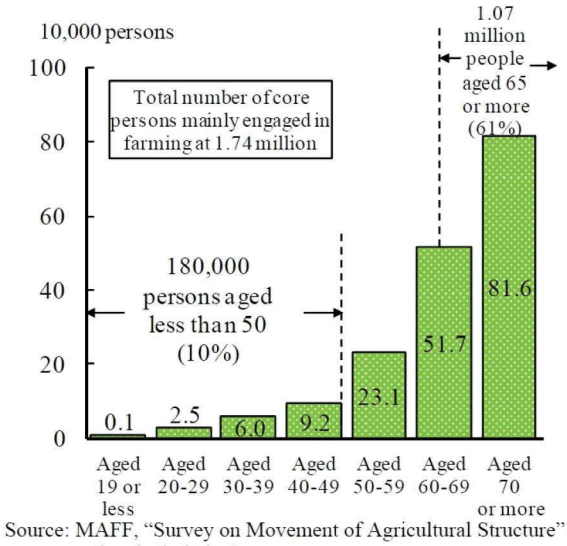


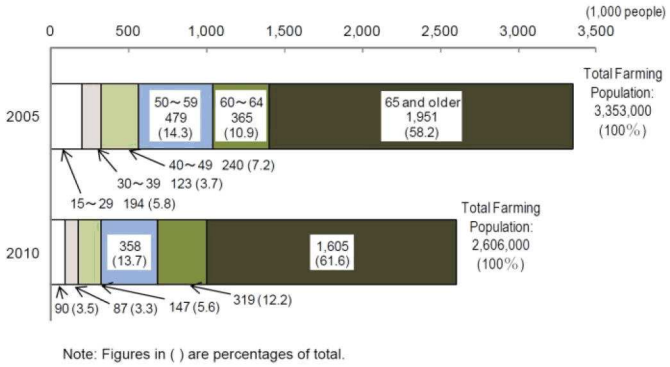
Figure 11. Changes in Number of Farm Households



Source: MAFF, "Survey on Movement of Agricultural Structure" (custom-ordered tabulation)

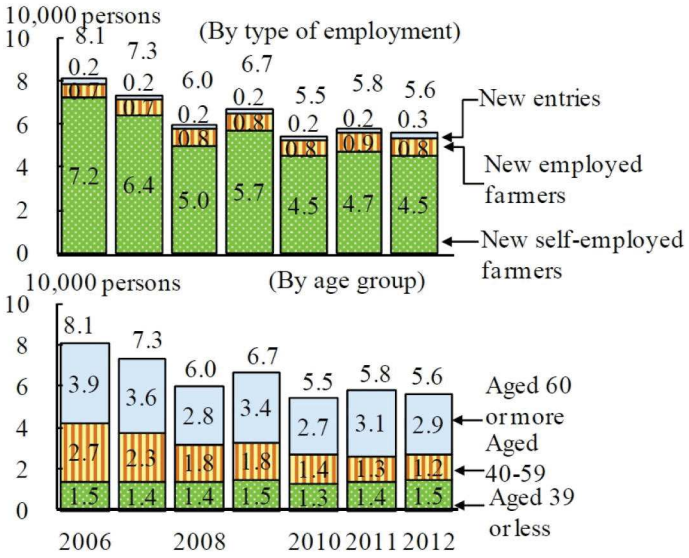
Note: "Core persons mainly engaged in farming" are those whose mainstay jobs are farming among population mainly engaged in farming (household members mainly engaged in self-employed farming).

Figure 12. Core persons mainly engaged in farming by age group (2013)



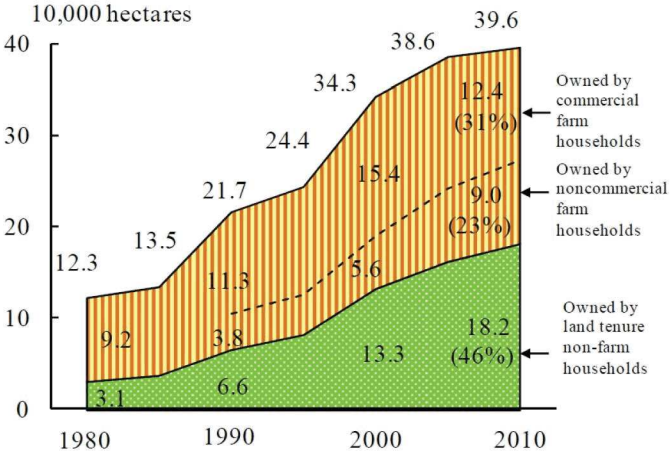
Note: Figures in ( ) are percentages of total.

Figure 13. Breakdown of Population Engaged in Farming by Age



Source: MAFF, "Survey on Newcomers in Agriculture"
Note: New entries in 2010 and survey results in 2011 and 2012 do not cover regions where surveys were impossible due to the Great East Japan Earthquake.

Figure 14. Changes in new farmers



Source: MAFF, "Census of Agriculture and Forestry"
Note: In and before 1985, farm households had not been divided into commercial and noncommercial farm households.

Figure 15. Changes in abandoned cultivated land area by farm household category

2 Forestry

Table. 1 Forest and grazing land area／forest ratio

Unit: 10,000 ha

Classification		Forest & Grazing Land Area			Current Forest Area			Forest Ratio
		Total	National	Private	Total	National	Private	
Results	2005	2,486	735	1,751	2,447	721	1,726	66.7
	2010	2,485	722	1,763	2,446	708	1,738	66.6
Change (%)	2010/2005	-0.1	-1.7	0.6	-0.0	-1.8	0.7	-0.1
Composition (%)	2005	100.0	29.5	70.5	100.0	29.5	70.5	-
	2010	100.0	29.1	70.9	100.0	28.9	71.1	-

Note: Japan's total land area minus the northern territories (503,635 ha) is used when calculating the forest ratio.

Table. 2 Planted area by tree species

(unit: ha)

	Total	Softwood					Hardwood
		Japanese Cedar (*sugi*)	Japanese Cypress (*hinoki*)	Pine (*matsu*)	Japanese Larch (*karamatsu*)	Others	
1995	(48,650)	(13,660)	(22,332)	(219)	(2,739)	(5,544)	(4,156)
	45,241	13,196	20,908	199	2,677	4,577	3,684
2000	(31,316)	(8,223)	(11,574)	(233)	(2,524)	(4,954)	(3,808)
	28,480	7,967	10,745	223	2,493	4,014	3,038
2005	(25,584)	(5,216)	(7,096)	(226)	(3,534)	(5,728)	(3,784)
	22,498	5,011	6,307	183	3,423	4,611	2,963
2007	(25,836)	(5,546)	(6,205)	(265)	(3,788)	(5,647)	(4,385)
	23,064	5,289	5,460	252	3,642	4,715	3,706
2008	(23,400)	(5,171)	(4,726)	(217)	(4,414)	(5,173)	(3,699)
	20,865	4,904	4,079	175	4,260	4,380	3,067
2009	(23,032)	(4,787)	(5,241)	(166)	(4,638)	(5,282)	(2,917)
	20,006	4,522	4,113	150	4,435	4,490	2,296
2010	(18,756)	(4,132)	(2,820)	(247)	(4,604)	(4,265)	(2,688)
	16,388	3,844	2,262	237	4,418	3,381	2,246
2011	(19,596)	(4,598)	(2,830)	(178)	(4,950)	(4,220)	(2,819)
	16,697	4,311	2,347	169	4,713	2,839	2,318

Note 1: Figures do not include National Forest.
2: Figures in parentheses refer to the total area which includes area planted as the lower story of multiple storied forest.
Source: Forestry Agency

Table. 3 Forest area by owners

	2010	
	Forest area (ha)	Ratio to total area (%)
Total	17,627,335	100.0
Private	13,584,004	77.1
Public	3,395,800	19.3
Prefecture	1,248,262	7.1
Public corporation	436,296	2.5
Municipality	1,404,452	8.0
Property ward	306,790	1.7
Incorporated Administrative Agencies	647,531	3.7

Note 1: Total figures may not be equal to the sum of each item due to round off.
2: "Incorporated Administrative Agancies" include National University Corporations and Special Corporations.
Source: MAFF "2010 Census of Agriculture and Forestry"

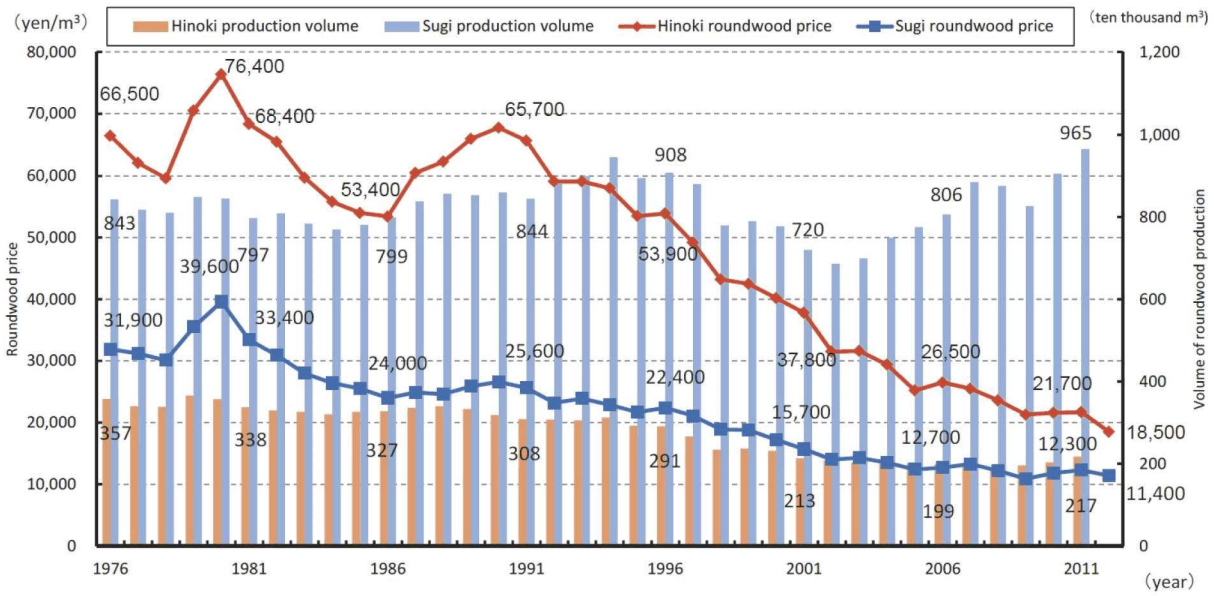


Figure 16. Production volume and roundwood prices of Sugi and Hinoki

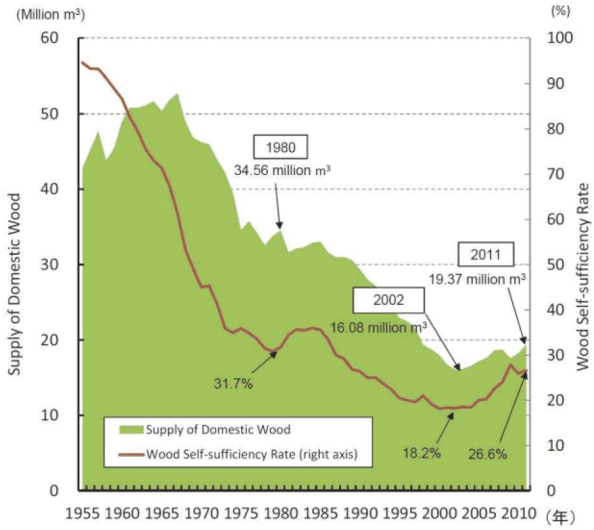


Figure 17. Domestic wood supply and wood self-sufficiency rate in Japan

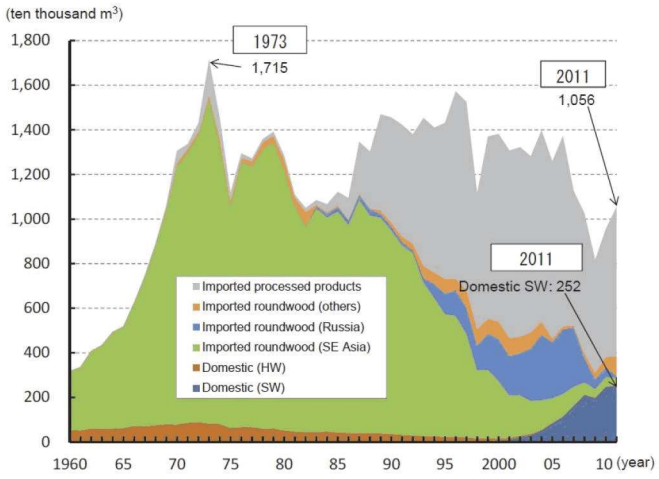


Figure 18. Supply of wood for plywood production

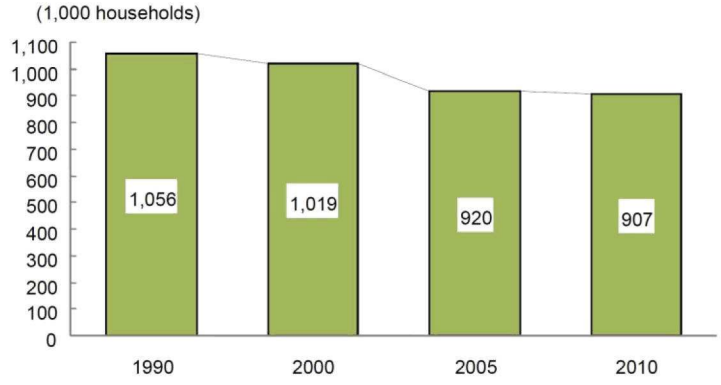


Figure 19. Changes in number of forestry households

References

Ministry of Agriculture, Forestry and Fisheries. 2012. *FY2011 Annual Report on Food, Agriculture and Rural Areas in Japan (Summary)*. http://www.maff.go.jp/j/wpaper/w_maff/h23/pdf/e_all.pdf (last accessed: 10/16/2014)

——. 2013. *FY2012 Annual Report on Food, Agriculture and Rural Areas in Japan (Summary)*. http://www.maff.go.jp/j/wpaper/w_maff/h24/pdf/e_all.pdf (last accessed: 10/16/2014)

——. 2013. *Annual Report on Forest and Forestry in Japan (Summary)*. http://www.rinya.maff.go.jp/j/kikaku/hakusyo/24hakusyo/pdf/h24summary.pdf (last accessed: 10/16/2014)

——. 2014. *FY2013 Annual Report on Food, Agriculture and Rural Areas in Japan (Summary)*. http://www.maff.go.jp/j/wpaper/w_maff/h25/pdf/e_all.pdf (last accessed: 10/16/2014)

Appendix 2. Orientation material

Orientation for “Sakura Exchange Program in Science”

20th. Oct. 2014, Nagoya-University

1. Aims of this program

This program aims at providing the opportunity for young staff of NAFRI to learn advanced agricultural technology and institution of Japan, to improve the ability of communication, presentation and debate in the international occasion, and to have stronger motivation to develop themselves as a next-generation leader.

2. Confirmation items

(1) Your belongings

Camera, PC, field-note, etc...

(2) Handout list

☐ No.1 Announcement material
☐ No.2 Itinerary
☐ No.3 Questionnaire of JST (You will fill and submit it on 27th Oct)
☐ No.4 Map of Japan and Kyoto
☐ No.5 Material and report about Japanese agriculture

(3)Document Submission

①Stub of your air ticket (from Lao to Japan)

②Certificate of insurance consent

(4)Individual budget

Please confirm carefully amount of the budget and sign the receipt of it.

3. Schedule

(Please see itinerary)

4. Practical training at farm in Maibara

Activities in Maibara will be main one of this program. You will make 4 groups and each group stays and works with 4 host farmers.

	Grouping	Name of host farmer	Phone number of host farmer
Group A	(3 females) . . .	Yamazaki	0749－59－0225
Group B	(2 males) . .	Taniguchi	0749－58－1771
Group C	(2 males) . .	Nagasaka	090－6912－1804
Group D	(3 females) . . .	Masuda	0749－52－2364

＊Contents of activities may change depending on weather.

5. Progress presentation at work shop

You will give a presentation about your activities of this program at work shop on 27th Oct. You can make your presentation contents freely.

(e.g. points for presentation contents)

・Advanced technology, management and institution of Japan.

・Impressive points and good /bad ones.

・Your perspective on Japanese rural society or agrarian structure.

6. Progress Report

You will complete a progress report of this program until 18th November.
Your progress report must refer 4 points below.

①What you learnt from this program

②How you apply your experience of this program into agriculture in Lao.

③How you evaluate this program.

④Suggest what kind of activities are most needed when other Lao researchers join this program next year.

7. N.B.

Each person should responsibly pay attention to your own safety. It is also an aim of this program that you complete all activities self-sufficiently.

・Be responsible to your belongings and baggage.

・Always carry your passport.

・Pay attention to your health. If you feel sick, please inform us quickly.

・Be punctual, because your schedule are sometimes tight.

・You can drink tap-water in Japan.

・Japanese interpreters cannot speak Lao language, communication should be based on English.

8. Response to Emergency

If something emergency occurs, please give a call for one of us 2 Japanese staff quickly. Our phone numbers are below.

・Ide: 090-5960-4153

・Yamada: 080-5556-6453

If we cannot receive your call, please give a call to Prof. Kono or Prof. Yokoyama

・Prof. Kono: 075-753-7323, 080-3035-5596

・Prof. Yokoyama: 052-789-4742, 090-4987-2785

Hospital list

Site	Name of hospital	Phone	Cashless service	Remarks
Nagoya	Hoken Kanri Shitsu at Nagoya University	052-789-3969	Unavailable	Response to miner illness. Reception hour:10:00~11:30, 13:30~16:00
	Nagoya Daini Sekijuji Byoin	052-832-1121	Unavailable	
	Nagoya Daigaku Igakubu Fuzoku Byoin	052-741-2111	Unavailable	
Maibara	Nagahama Sekijuji Byoin	0749-63-2111	Unavailable	
Kyoto	Kyoto Daini Sekijuji Byoin	075-231-5171	Available	
	Kyoto Daigaku Igakubu Fuzoku Byoin	075-751-3111	Available	

Appendix 3. Reference books

	Book Title	Publisher
1	Landscape Ecology in Theory and Practice: Pattern and Process by Monica G. Turner	Springer Science & Business Media, 2001
2	The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia (Yale Agrarian Studies Series) Paperback – November 30, 2010 by James C. Scott	Yale University Press (November 30, 2010)
3	Understanding Institutional Diversity (Princeton Paperbacks) by Elinor Ostrom	Princeton Univ Pr; (2005/8/22)
4	Powers of Exclusion: Land Dilemmas in Southeast Asia (Challenges of the Agrarian Transition in Southeast Asia (Chatsea)) Paperback – June 30, 2011 by Derek Hall (Author), Philip Hirsch (Author), Tania Murray Li (Author)	University of Hawaii Press (June 30, 2011)
5	Agrarian Angst and Rural Resistance in Contemporary Southeast Asia Edited by Dominique Caouette, Sarah Turner	Routledge; 1 edition (Sept. 10 2009)
6	Governing the Commons: The Evolution of Institutions for Collective Action by Elinor Ostrom	Cambridge university press
7	Water Rights and Social Justice in the Mekong Region by Lazarus, Kate Resurreccion, Bernadette P.	Earthscan Publications Ltd
8	Contested agronomy: Agricultural research in a changing world by James Sumberg and John Thompson	Routledge
9	An Illustrated Eco-History of the Mekong River Basin by Tomya Akimichi	White Lotus Co Ltd
10	Economic and Policy Lessons from Japan to Developing Countries Edited by Toshihisa Toyoda, Jun Nishikawa and Hiroshi Kan Sato	Palgrave Macmillan
11	The Ecology of Tropical East Asia by Richard T. Corlett	Oxford Univ Press r(2014/10/21)
12	On The Borders of State Power: Frontiers in the Greater Mekong Sub-Region (Routledge Studies in the Modern History of Asia) by Martin Gainsborough (Editor)	Routledge (December 22, 2008)
13	Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance by Francois Molle (Editor), Tira Foran (Editor), Mira Kakonen (Editor)	Routledge (April 30, 2009)

Appendix 4. Newspaper article

朝日新聞　2014年（平成26年）10月25日（土曜日）　びわこ　20

農業体験　耕運機に興奮

ラオスの研究員「母国で役立てたい」

耕運機の説明を受けるローボンア・ポンピアナさん㊧＝米原市柏原で

米原

ラオスの農業研究員が二十四日、米原市柏原で日本の農業体験をした。

独立行政法人科学技術振興機構が進める、アジアの青少年を日本へ招待する「さくらサイエンスプラン」の一環。京都大東南アジア研究所が、北びわこの農業技術を見てもらおうと企画した。十人が柏原のほかに甲津原、大久保、宇賀野の市内四カ所に派遣された。

農業体験をした研究員は、国立農林業研究センターの研究員ローボンア・ポンピアナさん㈢とセンゴンケオ・パタナさん㈡の二人。通訳としてインサイ・ハンサイさん㈢も参加した。

地元の農業石田英雄さん㈥の田んぼで草刈りをしたり、別の田んぼで耕運機に乗り、田の整備もした。

二人は初めて乗る耕運機に興奮気味。石田さんの説明を受け、日本の農地に見られる用水路の役割や稲の育て方などを質問していた。

パタナさんは「今日見たことをラオスに帰り研究に役立てたい」と話していた。

パタナさんらは、サツマイモ掘りを楽しみ、古民家「古々屋」での民泊を体験する。

（木造康博）

びわこ版

家のソファです。ねころがってゲーム機やおもちゃで遊んだり、テレビを見たりして一番リラックスできるからです。ふかふかで、楽しくすごせて一日のつかれもとれるのでお気に入りです。

米原市春照小5年
新川　雄大君

アイスポット

25th Oct. 2014
The Chunichi Shimbun

Achievements of Japan-Asia Youth Exchange Program in Science for National Agriculture and Forestry Research Institute, Lao PDR

Center for Southeast Asian Studies
Kyoto University

Graduate School of Environmental Studies
Nagoya University

In collaboration with

National Agriculture and Forestry
Research Institute, Lao PDR.